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Research Article

A Web-Based Assessment on Burnout and Related Responsible Factors Among Plastic surgeons and Trainees in Sindh

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Abstract

Background: Burnout syndrome is a combination of diminishing work (emotional exhaustion), considering people as objects (depersonalization), and lack of sense of meaningfulness in work (low personal accomplishment). Pakistani consultants and particularly plastic surgeons are ignored entirely in this regard. The aim of this study was to determine the burnout burden and related responsible factors for burnout among plastic surgeons and trainees in Sindh.

Methodology: A web-based cross-sectional study was conducted to assess burnout among plastic surgeons in different hospitals in Hyderabad, Karachi and Jamshoro, Sindh, Pakistan using Google forms from July to December 2022. All the certified plastic surgeons, trainees registered for more than 6 months in plastic surgery, belonging to any age or gender, and working in private or public sector hospitals were included. A self-administered structured questionnaire was used to collect data while the Maslach Burnout Inventory was used to measure burnout.

Results: Varying degrees of burnout were reported by 89(49.4%) post-graduate trainee students and plastic surgeons. Out of total burnout cases, 51(57.3%) had a high burnout rate. Sleep hours, marital status and workout activity or exercise were significantly associated with emotional exhaustion ($P < 0.05$) while age, designation, smoking, sleep hours and physical activity were significantly associated with depersonalization.

Conclusion: The study concludes that the burnout rate among plastic surgeons and trainees in plastic surgery is significantly higher. Age, sleeping hours, marital status, workout activity, designation, and smoking, are significantly associated with burnout rate.

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Keywords | Burnout, Mental health, Plastic surgeon

Introduction

Burnout syndrome is the combination of diminishing work enthusiasm (emotional exhaustion), considering people as objects (depersonalization), and lack of sense of meaningfulness in work (low personal accomplishment). Burnout in a cosmetic surgeon can have serious effects for the surgeon, their families, patients, staff, colleagues, peers, and organization.[1] It is also recognized that burnout is linked with a compromised performance at work and health-related issues leading to increased physician errors, causing even more burnout. Moreover, there are associated negative physiological, cognitive, psychological and behavioral changes. Frustration and discontentment a significant impact on patients and organizations while reduced commitment and intentions to leave workplace organizations negatively impact workers' turnover rate.[2-4] Burnout rates among different medical and surgical specialities have

been demonstrated by different studies. According to the study, burnout rates among physicians in various specialties ranged from 0% to 80.5%. Another study on orthopedic surgeons reported higher burnout rates in the range of 50%-60%.[2,5-8]

Being a plastic surgeon is both gratifying and challenging. The path to groom as a surgeon is an extensively strenuous struggle and brings substantial challenges to both the surgeon and their close ones.[6] A survey carried out by the American Society of Plastic Surgeons (ASPS) indicated that over one-fourth of plastic surgeons have symptoms of professional burnout.[9] A study demonstrated that surgeons in the middle-aged groups and those who were in poor health, in addition to those who had a reconstructive instead of cosmetic practice, long work hours, ER call obligation, a nonacademic environment, and group rather than solo practice, were the most at risk.[10] Another meta-analysis found that burnout was more common in plastic surgeons (32.3%) than in trainees (36.6%) and that trainees had considerably greater levels of emotional weariness, depersonalization, and poor personal accomplishment than plastic surgeons.[11]

Practicing as a plastic surgeon in Pakistan has its own set of challenges. The intersection between plastic surgery and other large disciplines is quite broad. Academic institutions do not provide adequate chances. It is a "dependent" branch since the most of our business is based on referrals from peers with various skills. Yet, professionals, particularly plastic surgeons, are completely ignored in this regard. There is minimal and sparse national/local data available to determine the level of burnout among plastic surgeons and citizens of Pakistan, particularly Sindh. Keeping in view, this study was planned to determine the frequency and factors responsible for burnout among plastic surgeons in Sindh.

Methodology

Web-based cross-sectional survey was conducted to assess burnout among plastic surgeons and trainees in different hospitals of Hyderabad, Karachi and Jamshoro, Sindh, Pakistan using Google forms from July to December 2022 after receiving approval from the institutional ethical review board of Liaquat University of health sciences, Jamhsoro. All the certified plastic surgeons and trainees registered for more than 6 months in plastic surgery, belongs to any age or gender, working in private or public sector hospitals were included. While non-practicing plastic surgeons and those not willing to participate were excluded. Using World Health Organization (WHO) sample size calculator, the sample size of 180 was drawn by keeping confidence level at 95% and margin of error at 5%. List of plastic surgeons and registered trainees was collected from different hospital and were invited to participate in the study through a series of email and WhatsApp. A semi-structured questionnaire that includes questions related to socio-demographic details of participants like age, gender, designation, marital status, no. of children if any, working hours per week, smoking etc. was used to inquire about the basic information of participants. To assess burnout, the Maslach Burnout Inventory (MBI) was employed.[12] It is a popular study technique that consists of 22 questions that measure three domains: emotional fatigue (EE) (9 questions), depersonalization (DP) (5 questions), and personal accomplishment (PA) sensation (8 questions). High EE and DP scores are correlated with increased burnout, whereas high PA scores are associated with less burnout. High EE was defined as an EE score more than 26, whilst high DP was defined as a DP score greater than 12. A PA score of less than 32 was defined as low PA. A high risk of burnout was characterized as having both a high EE and a high DP.

The data was analyzed in SPSS ver. 23. All the quantitative variables including the burnout components (EE, DP, and PA) are presented as mean ±SD and qualitative data including age group, sex, marital status etc. are presented as frequency and percentages. Student's t test was used to evaluate the association between categorical demographic variables and all three burnout components. P value < 0.05 was considered statistically significant.

Results

Total 180 participants were included in the study of which majority belongs to age 25-27 years. Among the participants, most of them were male while majority of them were currently registered postgraduate trainee or trainees in plastic surgery. Other related socio-demographic variables are presented in Table I.

Burnout of varying degree, was reported by 89(49.4%) of trainees and consultant plastic surgeons. Out of total burnout cases, 51(57.3%) having high, 20(22.5%) moderate and 18(20.2%) had low burnout status while 91 (50.6%) reported no burnout. The mean score of EE, DP and PA along with the overall burnout are mentioned in Table 2. Majority of trainees reported with high EE, 41.6% were found to have high DP status, and 42.7%

had a poor perception of PA. (Table 2)

Sleep hours, marital status and workout activity or exercise were significantly associated with EE ($P < 0.05$) while age, designation, smoking, sleep hours and physical activity were significantly associated with DP. Moreover, age, sex, designation, marital status and physical activity is significantly associated with PA ($P < 0.05$). (Table 3)

Discussion

Burnout impacts both senior and younger doctors, well-paid and low-paid physicians, men and women, private and university physicians, all surgical specialties, all countries, and all stages of one's career.[9] In this study, we evaluate the proportion of burnout in the area of plastic surgery among Pakistani surgeons and trainees as well as to examine burnout risk variables in order to gather understanding about the level of burnout for future plastic surgeons. Many researchers have investigated burnout among plastic surgeons in the western and international literature.[9,13] According to our findings, 49.4% of consultant and resident plastic surgeons have low to high burnout level. Our finding is substantially consistent with McIntire et al., Morrell et al. and Panse et al. while higher than Shaikh et al., Ribeiro et al. and Haik et al.[11,12,14-17] Moreover, a high prevalence of burnout (77.6%) has been reported by us Sabah et al.[18] This variation may be due to the geographical variances, healthcare system rules, and burnout classifications and scales.

Table 1: *Socio-demographic Details Of Participants (n= 180)*

	n (%)
Age (in years)	
• 25-27	73 (40.5)
• 28-30	57 (31.7)
• 31-33	31 (17.3)
• 34 and above	19 (10.5)
Sex	
• Male	99(55.0)
• Female	81(45.0)
Current Designation	
• Senior surgeon	43(24.0)
• Junior surgeon	51(28.3)
• Trainee	86(47.7)
Marital status	
• Single	46(25.6)
• Married	134(74.4)
Children (n=134)	
• Yes	90(67.2)
• No	44(32.8)
Smoker	
• No	107(59.4)
• Yes	73(40.6)
Average hours of sleep/day	
• Five or less	28(15.5)
• Six	78(43.3)
• Seven	74(41.2)
Workout /exercise	
• Yes	116(64.4)
• No	64(35.6)

Table 2: *Descriptive Statistics For Burnout Components (n=89)*

	Mean	S.D	High n (%)
MBI-HSS			
• Emotional Exhaustion	30.87	11.28	64(72.2)
• Depersonalization	12.21	5.87	37(41.6)
• Personal accomplishment	33.86	6.68	51(57.3)

Persistent burnout has a significant effect on memory, attentiveness, and cognitive health. This lack of workplace involvement may result in decreased work performance, raising the risk of errors in routine medical practices. Nevertheless, burnout is more commonly associated with malpractice lawsuits.[2,6,10] EE and DP are stress-related signs of burnout that involve a sense of hopelessness, loneliness, melancholy, anger, impatience, and irritation, as well as decreased PA. When medical professionals and trainees are stressed as a result of extensive study and workload, EE may be an indication of heightened stress levels produced by multitasking of studying and patient care, leading in increased EE and DP.[2,19] In our study, 72.2% of the plastic surgery consultants and trainees reported high levels of EE, whereas 41.6% reported high levels of DP. These findings are significantly higher than those published in a study on French plastic surgeons. In our study, 42.7% of the sample population indicated poor levels of PA, compared to 48.1% in the French national poll and consistent with Dhamash et al.[5,20]

The present study evaluated relationship of burnout with different factors like gender, age, physical activities, designation and sleeping hours etc. Females were found to be more susceptible to burnout syndrome in the present study. These findings are consistent and supported by other Pakistani studies by us Sabah et al., bin zafar et al.

Table 3: *Relationship Between Categorical Demographic Variables With Burnout Components*

	E.E		D.P		P.A	
	Mean±SD	**p-value**	**Mean±SD**	**p-value**	**Mean±SD**	**p-value**
Age						
• < 28	31.24±7.41	0.61	9.73±5.78	**0.001***	30.88±6.11	**0.000***
• ≥ 28	32.11±13.21		12.78±6.47		35.86±7.23	
Sex						
• Male	31.87±11.43	0.63	11.23±7.111	0.172	32.87±6.17	0.08
• Female	32.65±10.57		2.58±6.12		34.56±6.78	
Current Designation						
• Surgeon	30.14±10.34	0.17	10.43±6.09	**0.004***	31.55±5.23	**0.001***
• Trainee	32.38±11.78		13.06±6.19		35.14±6.57	
Marital Status						
• Single	29.22±11.28	0.112	11.33±6.43	0.069	33.12±5.39	0.361
• Married	36.87±9.78		13.31±6.31		37.21±9.75	
Workout activities						
• Yes	26.87±11.78	**0.000***	9.43±6.16	**0.000***	34.88±6.57	**0.008***
• No	35.23±8.66		14.29±5.87		32.18±6.26	
Smoker						
• Yes	30.76±10.57	0.180	11.96±5.78	**0.004***	34.45±6.87	0.361
• No	28.65±10.18		9.29±6.38		33.54±6.32	
Sleep hours						
• ≤ 6	33.22±11.56	**0.035***	13.11±6.67	**0.033***	33.30±6.06	0.412
• > 6	29.76±9.56		11.07±5.68		34.12±7.27	

* Students t-test ($p<0.05$)

and Zaman et al. reported that females were more significantly found to have burnout compared to their counterparts.[18,21,22] This may be due to the fact that Asian working women have domestic obligations in addition to their professional work. This added responsibility may also heighten emotional vulnerability and lead to burnout.

The overall health of plastic surgeons has a favorable influence on the development of burnout. While having children appears to reduce the risk of burnout. Furthermore, a lack of interests is linked to higher degrees of burnout. Burnout has been demonstrated to be significantly lower amongst people who exercised or workout on a routine basis.[20] We observed that participating in fitness activities was highly associated with decreased levels of burnout in our study. Moreover, lack of interests is associated with increasing burnout levels.[14,20,22]

To the best of knowledge, this study is first of its kind that highlighted burnout among plastic surgeons and trainees of plastic surgery in Hyderabad, Jamshoro and Karachi. However, present study should be evaluated with its limitations in mind. Because of the study design, the results of the study are applicable only at one point in time. As the study was relying on self-reported data so it is prone to different biases including recall bias, social desirability bias and interpretation bias. Sample size was also another significant constraint. Different elements like personality traits in professional burnout and emotional intelligence are not addressed in the present study.

Conclusion

The study concludes that the burnout rate among plastic surgeons and trainees in plastic surgery is significantly higher. Among the factors, age, sleeping hours, marital status, workout activity, designation, smoking, are responsible and significantly associated with burnout rate.

Conflict of interest *None*

Funding Source *None*

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Research Article

Prevalence of Breastfeeding in Infants with Cleft of Lip / Palate and Challenges Faced by Mothers in Pakistan

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Abstract

Background: Cleft lip and cleft palate is congenital abnormality in which problem of feeding occurs immediately after birth, especially if the mother has first child and there is no family or expert medical support. Epidemiological data on prevalence of breastfeeding and its barriers among these children is significantly lacking. Our primary aim was to estimate the prevalence of breastfeeding among infants with cleft lip and/or palate in the city of third world country like Pakistan. Our secondary aims were to determine the challenges faced by mothers when breastfeeding these infants, and the extent of education/support they received.

Methodology: We conducted questionnaire-oriented interviews with mothers of infants born with oral clefts. All patients who presented to the cleft clinic in the study period were interviewed. Infants with co-morbid conditions were excluded to limit confounders. Data was compiled into and analysed using Statistical Package for Social Sciences Version 23.0

Results: We recruited 336 participants in our study. Mean age of children was 10.5 months (standard deviation ± 7.6), and their age at the time of surgery ranged from 3 month to 3 years. 97.3% of mothers had the intention of breastfeeding their child before birth but only 75.9% could do so while 13% of these children were exclusively breastfed. 63.7% of mothers reported receiving feeding advice.

Conclusion: Prevalence of breast feeding was poor. One mother out of four was not able to feed their children due to various reasons. Mothers face inadequate guidance and lack of financial and moral support from families.

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Keywords | Breastfeeding, cleft lip; cleft palate; craniofacial abnormalities; Pakistan.

Introduction

Oral clefts are one of the most common craniofacial birth defects.[1] The mean incidence of orofacial clefts in Pakistan is 1.91 per 1000 births (one per 523 births).[2]

The first problem which parents encounter is to how to feed a child with cleft lip and cleft palate (CLP).[3] Breastfeeding is a major challenge in the immediate antenatal period for an infant with CLP. This requires significant guidance for the parents, and certain adjustments and accommodations to meet the nutritional and hydration needs of the infant.[4,5]

Due to their altered anatomy, infants with CLP cannot suck properly, generating a plethora of problems such as choking, nasal regurgitation and prolonged feeding time.[6]

Very few studies have been carried out globally and no study in Pakistan to assess the perception and behavior of mothers concerning breastfeeding for infants with CLP.[7]

The primary aim of our study was to estimate the prevalence of breastfeeding among infants with cleft lip

and/or palate in Pakistan. Our secondary aims were to determine the challenges faced by mothers when breastfeeding these infants, and the extent of education/ support they received.

Methodology

A cross-sectional study was designed, which was carried out using questionnaire-based interviews. This was deemed to be the most appropriate study design to obtain data from the all study participants in a systematic and consistent manner, while eliminating interviewer bias by using a standard questionnaire as our tool. The study protocol was reviewed by the Institutional Review Board at Al-Mustafa Hospital, and deemed exempt.

Our study was conducted at the Al-Mustafa Hospital in Karachi, Pakistan over a period of eight months from April 2021 to December 2021. Karachi is the largest city of Pakistan with a population of more than 30 million people, comprising of a mixture of all the major ethnic groups found in Pakistan.[8] The public healthcare system is severely underfunded, and the bulk of medical services are provided by smaller private hospitals that may be for-profit, or supported by charitable donations. Our study site is a hospital that is predominantly supported by charity, and caters to all patients regardless of their financial background.

We utilized convenience sampling by recruiting mothers of CLP children aged 3 years and younger presenting to the cleft clinic during the study period. To limit effect of confounders, we excluded mothers of children suffering from comorbid conditions or congenital disorders such as congenital heart disease or chromosomal disorders as these can be independently associated with breastfeeding challenges. We did not offer compensation for study participation, and recruited a total of mothers of 336 children during the 8-month study period.

We divided the type of orofacial clefts encountered into 4 categories as per described by Kernahan.[9]

Unilateral cleft lip (incomplete or complete), bilateral cleft lip (incomplete or complete), unilateral cleft lip with cleft palate (anterior or full cleft palate), bilateral cleft lip with cleft palate (anterior or full cleft palate) and isolated cleft palate (unilateral, bilateral or median). Cleft lip can be complete or incomplete based on the extent of the cleft through the lip and into the nasal floor. When associated with cleft lip, cleft palate can be anterior, i.e. only extending to incisor foramen or full i.e. extending beyond it. Isolated cleft palate can be median, unilateral or bilateral. We did not measure the cleft size by any tool, but noted the type of cleft as was described by the surgical team at Al-Mustafa Hospital. We collected data pertaining to basic demographics of the children and their mothers, as well as questions about the child's diagnosis, and continuous or exclusive breastfeeding practices before and after surgical repair. We went into detail about their intention to breastfeed prior to birth of the child, method of breastfeeding (if any), difficulties encountered by mothers and any support and/or guidance they might have received during their breastfeeding practice. We also went on to record whether they commenced breastfeeding post-operatively till one week. Exclusive breastfeeding was defined as the child being fed expressed mother's milk or directly at the breast without the ingestion of any other solids or liquids for the first six months of life or beyond, as recommended by the World Health Organization. Complementary feeding was defined as the child receiving mother's milk supplemented by other sources of nutrition and hydration, e.g. cow's milk or formula milk.

For the purpose of data collection, we constructed a questionnaire consisting of a series of questions. Verbal consent was taken from all mothers before conducting personal interviews with them. All interviews were conducted personally by doctors working on the cleft team, and conducted in Urdu, which is the national language of Pakistan. The questionnaire was similarly designed in Urdu.

We used IBM SPSS (Statistical Package for Social Sciences Version 23.0) for data management and statistical analysis. Descriptive statistics included mean (standard deviation) for continuous variables and proportions for categorical variables. The chi-squared test and the t-test were used to perform inferential statistics where appropriate, with the confidence interval set at 99% and a p-value < 0.05 considered as significant.

Results

Mothers of 336 children were recruited with CLP during the 8-month study period, and the distribution included 65 (19.3%) children with unilateral cleft lip, 13 (3.9%) with bilateral cleft lip, 134 (39.9%) with unilateral cleft lip and palate, 60 (17.9%) with bilateral cleft lip and palate and 64 (19.0%) with isolated cleft palate. Mean age of the children in our study was 10.5 months (standard deviation ± 7.6), and their age at the time of surgery ranged from 3 month to 3 years. Demographic and socioeconomic characteristics of the study children and

their mothers are displayed in Table 1. Majority of mothers were aged 26-35 years (53%), had received education of primary level or below (53.6%), belonged to lower socioeconomic groups (93.4%) and were multiparous (74.1%) with only one child afflicted with cleft lip and/or palate (94.8%).

Table 2 highlights participant breast feeding practices by type of orofacial cleft. Our data shows that 327 (97.3%) mothers intended to feed breast milk before birth but only 255 (75.9%) could do so. Of these 255 infants, 168 (65.9%) stopped receiving breast milk before the age of 6 months, whereas the remaining 87(34.1%) continued to receive breast milk either exclusively (n=45) or complemented (n=42). There was a significant difference in prevalence of breastfeeding amongst different cleft types (p=0.03). It was most prevalent for children with isolated cleft lip (91%) and least amongst children with unilateral cleft lip and palate (67.2%). There was no statistically significant difference in prevalence of breastfeeding between children with combined cleft lip and palate when compared to infants with isolated cleft palate (p=0.28). However, a statistically significant difference was noted when comparing prevalence of breastfeeding in children with combined cleft lip and palate to infants with isolated cleft lip (p< 0.001).

The average length per breastfeeding session was 17.3 minutes (SD=14.4) and the average number of breast-

Table 1: *Socio-demographic characteristics of children born with cleft lip and/or palate and their mothers. (n=336)*

Variables	N (%)
Child's age (months)	
Less than 6	108 (32.1)
6 – 12	142 (42.3)
13 – 24	75 (22.3)
25 – 36	11 (3.3)
Mother's age (years)	
15-25	138 (41.1)
26-35	178 (52.9)
36-45	16 (4.8)
46-55	4 (1.2)
Mother's education	
None or primary schooling	180 (53.6)
Post primary schooling to higher secondary school	120 (35.7)
Undergraduate or postgraduate	36 (10.7)
Monthly income of household (USD $100 = Rs. 16000)	
Rs. 25,000 or less	314 (93.4)
Rs. 25001- 65,000	20 (6.0)
Greater than Rs. 65,000	2 (0.6)
Parity	
Primiparous	87 (25.9)
Multiparous	249 (74.1)
Multiparous mothers with another child afflicted with cleft lip and/or palate	
Yes	13 (5.2)
No	236 (94.8)

Table 2: *Comparison of breastfeeding data amongst different cleft lip and/or palate groups*

		Type of orofacial cleft			
	All (n=336) n (%)	**Isolated cleft lip (n=78) n (%)**	**Unilateral lip and palate (n=134) n (%)**	**Bilateral lip and palate (n=60) n (%)**	**Isolated palate (n=64) n (%)**
Intention to breastfeed prior to child's birth	327 (97.3)	74 (94.9)	130 (97.0)	58 (96.7)	64 (100)
Actual prevalence of breastfeeding	255 (75.9)	71 (91.0)	90 (67.2)	45 (75.0)	49 (76.6)
Methods attempted for breastfeeding					
Directly from breast	112 (33.3)	55 (70.5)	25 (18.7)	9 (15.0)	23 (35.9)
Expressed mother's milk via bottle	105 (31.3)	15 (19.2)	46 (34.3)	28 (46.7)	16 (25.0)
Cup or Spoon	60 (17.9)	11 (14.1)	27 (20.1)	9 (15.0)	13 (20.3)
Feeding Technique (Straddle position for feeding)	50 (14.9)	9 (11.5)	14 (10.4)	10 (16.7)	17 (26.6)
Nasogastric Tube	3 (0.9)	0	3 (2.2)	0	0
Other	3 (0.9)	1 (1.3)	2 (1.5)	0	0
Infant's age at cessation of breastfeeding					
Less than 1 month	86 (25.6)	10 (12.8)	34 (25.4)	23 (38.3)	19 (29.7)
1 month to less than 3 months	56 (16.7)	10 (12.8)	26 (19.4)	11 (18.3)	9 (14.1)
3 months to less than 6 months	26 (7.7)	3 (3.9)	7 (5.2)	7 (11.7)	9 (14.1)
Exclusive breastfeeding past 6 months	45 (13.4)	33 (42.3)	6 (4.5)	0	5 (7.8)
Complementary breastfeeding past 6 months (breast milk + formula)	42 (12.5)	14 (17.9)	17 (12.7)	4 (6.7)	7 (10.9)
Commencement of breastfeeding after surgery	75 (22.3)	45 (57.7)	20 (14.9)	6 (10.0)	4 (6.2)

feeding recorded per day was 7 (SD=3). The most common method for mother's milk feeding was directly at the breast (33.3%). Expressed milk given by bottle was the most common feeding method among children with unilateral and bilateral cleft lip and palate. Majority of the mothers (n=214, 63.7%) reported receiving feeding advice. The predominant source of advice was a healthcare professional (n=183, 85.5%), followed by friends and family (n=22, 10.3%), or a combination of the two (n=9, 4.2%). Of the 214 mothers that received any advice, a large majority (n=206, 96.3%) reported following the advice and 194 mothers (90.7%) felt that they received sufficient advice. Mothers that received feeding advice reported significantly higher rates of successful mother's milk feeding (175 out of 214, 81.8%) compared to mothers who did not receive any counselling (39 out of 122, 32%) (p=0.01).

Difficulties faced by participants by type of orofacial cleft are highlighted in Table 3. The most frequently reported difficulty was the inability of infants to form a seal around the nipple (43.2%), followed by the child choking or leaking milk through the nose (37.8%). Almost 15% of mothers (n=50) did not face any difficulty with breastfeeding their infants with orofacial clefts, and this finding was more pronounced in the group of children with unilateral cleft lip, with 35% of mothers reporting no difficulties with breastfeeding.

Discussion

Breastfeeding has been medically proven to have multiple short- and long-term benefits for maternal and child health. Mothers are encouraged to breastfeed their infants as soon as possible after the delivery, however, in Pakistan only 18% of mothers initiate breastfeeding within one hour of birth.[10] Multiple factors can interfere with timely breastfeeding, and congenital anatomic abnormalities like cleft lip and palate are known to be a major factor. We found that among children with clefts, 255(75.9%) were breastfed at some point, but only 45 (13.4%) were exclusively breastfed until 6 months as per WHO recommendation. This is significantly lower than previously reported national data that found the incidence of breastfeeding in non-CLP children to be 94.3%, while exclusive breastfeeding rates were recorded at 37.7%.[11,12] The lower rates of breastfeeding in our cohort can be attributed to multiple factors, including the anatomical obstacle associated with the cleft deformity, maternal factors, or both[13,14].

We found that children with unilateral cleft lip had the highest rates of "at-breast" feeding via cradle position (Fig.1) 55(70.5%), likely because solitary cleft lip allows adequate oral pressure to be generated, leading to appropriate suction and compression required for breastfeeding. Alternately, children with combination lip/palate defects or isolated palate defects had higher incidence of being fed expressed mother's milk via bottle, cup or spoon, and their mothers reported more problems during breastfeeding, foremost being the inability to seal around the nipple. This was likely because the connection between their oral and nasal cavity did not allow adequate negative pressure to be created, thereby causing difficulty in sucking.[15]

Another commonly reported problem among our cohort was the child choking or having milk regurgitating from the nose while being fed breast milk. Therefore, the low exclusive breast milk feeding rates in children with cleft palate can potentially be attributed to problems faced by mothers during breastfeeding and lack of proper feeding during sessions, compelling them to supplement with either formula milk or expressed breast milk. Furthermore, the time consuming and tiresome task

Table 3: *Common difficulties encountered during breastfeeding infants with different orofacial clefts*

Feeding difficulties encountered	All (n=336) n (%)	Type of orofacial cleft: Isolated cleft lip (n=78) n (%)	Unilateral lip and palate (n=134) n (%)	Bilateral lip and palate (n=60) n (%)	Isolated palate (n=64) n (%)
Child unable to seal around the nipple	145 (43.2)	25 (32.1)	66 (49.3)	29 (48.3)	25 (39.1)
Child choking or milk regurgitating through the nose	127 (37.8)	13 (16.7)	49 (36.6)	28 (46.7)	37 (57.8)
Maternal pain or discomfort	53 (15.8)	11 (14.1)	20 (14.9)	12 (20)	10 (15.6)
Maternal malnourishment	37 (11.0)	11 (14.1)	13 (9.7)	4 (6.7)	9 (14.1)
Insufficient knowledge	18 (5.4)	1 (1.3)	10 (7.5)	4 (6.7)	3 (4.7)
Others	33 (9.8)	3 (3.9)	17 (12.7)	7 (11.7)	6 (9.4)
None	50 (14.9)	24 (30.8)	11 (8.2)	10 (16.7)	5 (7.8)

of pumping breast milk could potentially overwhelm the mother and lead to her discontinuing breast milk feeding altogether and resorting to supplementation with formula, cow's milk or goat milk[16,17].

Figure 1: *Cradle position*

Our study reinforces the belief that the anatomy of the defect determines the degree of hindrance to feeding, and so influences the incidence of breast milk feeding as well, especially via "at-breast" feeding via the cradle method. Reid et al reported that there was no significant difference in the feeding skills of infants with cleft lip/palate or isolated cleft palate,[18] which is consistent with the incidence rates demonstrated in our cohort. However, when the incidence of breast milk feeding was compared between children with cleft lip/palate with those of children with cleft lip only, the difference was statistically significant ($p<0.001$).

That being said, mothers of children with isolated palates were the most likely to receive and follow feeding advice in our cohort. Consequently, they were most likely to use feeding techniques, like the horse-riding position to breastfeed. (Fig2.)

Although published surveys have reported parents of children with cleft lip and/or palate to be most dissatisfied with the level of information they receive regarding feeding in the hospital during the new born period of the child,[19] our data suggests otherwise. We found a significant association between mothers receiving feeding advice and the incidence of feeding the child breast milk successfully ($p=0.02$). However, it must be noted that the previously published surveys were conducted in developed countries with a patient population that had a higher education and socioeconomic level compared to ours. This could potentially result in higher expectation of support among the study participants, thereby leading to dissatisfaction with the breastfeeding advice subsequently provided. Also, the nature of breastfeeding advice given to mothers was not investigated extensively in our study.

Figure 2: *Horse riding position*

The rate of exclusive breast milk feeding in our sample of children with isolated cleft lip is 33(42.3%) being remarkably similar to the national rate of 38%, validating the notion that infants with cleft lip can be fed breast milk successfully.[19-20,21] The slightly higher rate may also show the impact of proper feeding advice received by the majority of the participants in our study, and the lack of even basic breastfeeding knowledge among the general population in Pakistan.[22,23,24] It is therefore imperative that medical personnel and midwives understand the importance of early initiation of breastfeeding, different methods of breastfeeding and common beliefs and misconceptions of mothers of CLP patients, so as to better counsel their patients.

Our study was conducted among patients presenting at a private welfare hospital, and majority of our study participants belonged to a lower socioeconomic and educational background. More than half of the mothers interviewed had very little or no formal education at all. Previous studies conducted in South Asian and African countries have reported a positive correlation between maternal education and breastfeeding incidence in the general population.[25,26,27,28] However, prior educational status of the mother did not correlate with the incidence of breastfeeding in our study ($p=0.29$). This may be attributed to cultural and religious inclinations towards breastfeeding[29] or preferential mother's milk feeding among lower income populations to spare the expense of formula milk.

Conclusion

Prevalence of breast feeding was poor. One mother out of four was not able to feed their children due to various reasons. Challenges face by mothers were lack of financial support as well as lack of guidance and moral support from families in addition to physical

challenges posed by infant like unable to seal around the nipple, Child choking or milk regurgitating through the nose.

Conflict of interest *None*

Funding Source *None*

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Research Article

Reliability of Loco Regional Flaps in Reconstruction of Large Scalp and Forehead Defects

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Abstract

Background: Scalp and forehead reconstruction is required after trauma, burns, oncological resection, and cutaneous infections. The scalp is a unique part of the human body, and its inherent anatomy presents challenges in the reconstruction of large defects. The goals of scalp reconstruction are well-vascularized soft tissue coverage, intact calvarium and an aesthetically pleasure appearance. The use of locoregional flaps for reconstruction allows for rapid recovery and shorter operative time.

Methodology: This retrospective observational study was conducted at the Department of Plastic Surgery and Burns Unit, Services Institute of Medical Sciences, Lahore. Twenty-five patients requiring scalp and forehead reconstructions were studied between January 2020 and January 2022. Demographic data, defect etiology, location and size of the defect, comorbidities, and type of flap used for reconstruction were also documented. The primary outcomes assessed were wound healing, operative time and length of hospital stay. The secondary outcome was complications (early and late). Data were analyzed using SPSS version 26.0.

Results: Among the 25 patients, 17 were male and 8 were female. The mean patient age was 40 ± 12 years. Seven patients underwent scalp rotation-advancement flap, 2 underwent scalp rotation along with forehead advancement flap, 3 underwent scalp rotation along with trapezius myoocutaneous flap, 10 underwent transposition flap, and 3 underwent double transposition flap. The most common etiology of the defect was tumor extirpation (n=13), followed by trauma (n=7), radionecrosis (n=3), and electric burn (n=2) (Figure 2). The temporal site was the most common site of the defect (n=8). The mean scalp defect (area) was 90 ± 31 cm^2. The mean operative time was 137 ± 9.6 minutes and the mean hospital stay was 5.96 ± 0.8 days. Wound healing on the 7th postoperative day was 94 ± 0.9%. Two patients developed small hematoma. One patient developed a distal flap necrosis.

Conclusion: Locoregional flaps can be a reliable option for reconstruction of large scalp and forehead defects.

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Introduction

Large complex defects of the scalp and forehead are difficult to treat. Severe trauma, extensive burns, oncological resections, and cutaneous infections are the main etiological factors.[1,2] Poor elasticity of the scalp is the main reason for difficult closure requiring a complex approach.[3] Reconstructive options for large defects can be loco regional flaps or free tissue transfer. Free tissue transfer has the advantage of a large surface area and a two-team approach but requires microvascular expertise, longer operative time, and possible intensive care unit (ICU) care.[4,5] Using loco regional flaps for reconstruction allows rapid recovery and shorter operative time. Therefore, these flaps can be promising alternatives to free tissue transfer.[6-8]

Due to the Covid-19 pandemic in Pakistan, there is a significantly increased burden on the healthcare system; hence, all surgical procedures were modified, keeping in mind the risks and benefits for patients and the safety of healthcare workers. Therefore, locoregional flaps were employed for soft tissue coverage of large defects on the scalp and forehead. These flaps have the advantages of reliability, shorter operative time, in turn leading to decreased risk of pulmonary complications, and reduced need for ICU care.

The purpose of this study was to analyze the outcomes of using loco regional flaps for the reconstruction of large scalp and forehead defects, with emphasis on flap reliability, operating time, hospital stay, and intra-and postoperative complications.

Methodology

This retrospective observational study was conducted in the Department of Plastic Surgery and Burns Unit, Services Institute of Medical Sciences, Lahore. The medical records of patients requiring scalp and forehead reconstruction from January 2020 to January 2022 were reviewed retrospectively.

Our inclusion criteria were patients of both genders aged 14–60 years with scalp defects of up to 50% with exposed bone. Patients having defects of more than 50%, and polytrauma were excluded from the study.

Demographic data, defect etiology, location and size were recorded on proforma, as well as the presence of any comorbidities such as diabetes, hypertension, ischemic heart disease, cancer, and chronic infection. For each patient CT scan was performed, and a neurosurgical opinion was taken in every case regarding the viability or involvement of the calvarial bone. Thorough debridement of the necrotic bones was performed, where necessary. In the case of malignancy clearance was confirmed using frozen sections. The various flaps used for scalp reconstruction were noted the flap type was chosen according to the site & size of the defect. The donor site was covered with split-thickness skin graft. The stitches were removed on the 10th postoperative day. Patients were followed up at 1 week at 2 weeks, and then at 3 months.

The primary outcomes assessed were wound healing, operative time and length of hospital stay. Wound healing was assessed in terms of the percentage on 7th postoperative day. Operative time was calculated in minutes the (skin incision to skin closure). Hospital stay was calculated in terms of the number of days from the time of admission to the time of discharge.

The secondary outcome was the incidence of complications. Postoperative complications were reviewed and categorized as early and late complications. Early complications include hematoma, seroma, infection, ischemia, venous congestion, and pulmonary complications. The late complications reviewed were partial flap loss and poor aesthetic results.

Data were analyzed using SPSS version 26.0. Quantitative data such as age, operating time, length of hospital stay, wound healing, and patient satisfaction are presented as means and standard deviations. Qualitative data such as sex and etiology were presented as frequencies and percentages.

Results

Among the 25 patients included in this study, 17 (68%) were males and 08 (32%) were females. The patients ranged in age from 14 to 60 years, with a mean age of 40 ± 12 years, 17 out of 25 patients had comorbid condition. Table 1 describe the patient characteristics. The frequencies and details of the various flaps used for scalp reconstruction are shone in figure

Table 1: *Patient characteristics*

Age	n ±SD
Mean Age (Years)	40±12
Gender	**n (%)**
Male	17 (68)
Female	08 (32)
Co-Morbidities	**n (%)**
Diabetes	5 (20)
Hypertension	7 (28)
Chronic infection	3 (12)
Ischemic heart disease	2 (08)

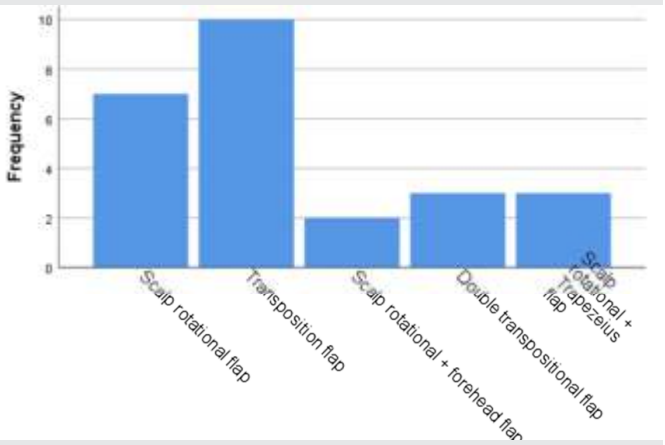

Figure 1. *Types of Flaps Used for Reconstruction*

The most common aetiology of the defect was tumour extirpation (n=13), followed by trauma (n=7), radio necrosis (n=3) and electric burn (n=2). The most common

site of the defect was the temporal region (n=8, 32%), followed by the parietal (n=6, 24%), frontal (n=5, 20%), occipital (n=4, 16%), and combined (n=2, 8%) regions. Table 2 shown the details of defect characteristics.

The defect sizes on the scalp and forehead ranged from 40 cm^2 to 150 cm^2, with a mean size of 90 ± 31cm^2. The mean operative time was 137 ± 9.6 minutes and the mean hospital stay was 5.96 ± 0.8 days. Wound healing on the 7th postoperative day was 94 ± 0.9%. There were no intraoperative complications. Two patients (8%) developed small hematomas, both of which were managed conservatively. One patient (4%) developed distal flap necrosis of approximately 1 cm (a late complication), which was managed by excision and secondary suturing (Table 3).

Table 2: *Defect Characteristics*

I-Aetiology	n (%)
Tumor extirpation	13 (52)
Trauma	07 (28)
Radionecrosis	03 (12)
Electric burn	02 (08)
II-Site	**n (%)**
Frontal	05 (20)
Temporal	08 (32)
Parietal	06 (24)
Occipital	04 (16)
Combined	02 (08)
III-Depth	**n (%)**
Skin and galea	09 (36)
Pericranium	12 (48)
Calvarial involvement	04 (16)

Table 3: *Primary And Secondary Outcomes*

I-Primary Outcomes	Mean /±S.D
Mean operation time (minutes)	137±9.6
Wound healing (%)	94±0.9
Mean hospital stay (days)	5.96±0.8
II-Secondary Outcomes (complications)	**n(%)**
Hematoma	2(8%)
Distal flap necrosis	1(4%)

Discussion

Reconstruction of a large scalp defect is difficult. According to the reconstructive ladder, skin grafting is the basic rung.[9] Netolitzky first demonstrated the use of skin grafting of calvaria after the presence of granulation tissue in 187110. In 1908, Robinson reported successful skin grafting on an intact periosteum before the presence of granulation tissue[11]. However, a well-vascularized surface and intact periosteum are limitations of skin grafting.

For extensive defects, a choice is made between locoregional and free flap coverage. Local flaps were first reported by Messner in 1894. Kazanjian (1944) demonstrated that galea scoring allowed for further advancement of the local flaps[12]. McLean and Buckne (1972) reported distant pedicle flaps and microvascular free tissue transfer[13].

In our study, we opted for locoregional flaps for large defects. Local flaps are fasciocutaneous flaps that provide good color, texture, and depth match in addition to short operating time, shorter hospital stay, and fewer complications. Zayakova et al. demonstrated that local flaps are a sufficiently good technique for scalp reconstruction when the defects are large with denuded periosteum calvaria or with bone loss[14]. They also accounted for complications; however, they did not consider the operating time and hospital stay. Whereas, in our study, we considered the length of hospital stay, operating time and complications as well.

The main patterns of local flaps include rotation, transposition, and rotation with advancement. The scalp is a well-vascularized tissue that provides flexibility for pedicle formation. These flaps can be based on any one of the five large arteries of the head: superficial temporal, supraorbital, supra trochlear, postauricular, and occipital. Depending on the size and location of the defect, flaps can be planned in different shapes. Flaps raised should be large enough to cover the defect, without tension. In certain cases, we used galeal scoring combined with a small back cut, to gain flap length.[15] E Raposio et al. have previously demonstrated that galeotomies are a useful adjunct to decrease the amount of closing tension when performing scalp reduction procedures. Galeal incisions are typically made parallel to the blood vessels to avoid damage to them.

For extensive defects, local flaps can be combined with regional flaps.[16] J Zenga et al. described the lower trapezius flap as a reliable reconstructive option for posterior scalp and high cervical defects. In our review, scalp rotation and trapezius musculocutaneous flaps were combined to cover the large posterior scalp defects. The disadvantages of this technique are scarring, which leads to unsatisfactory aesthetic outcomes and increased donor-site morbidity.

Although free tissue transfer is an excellent option for extensively covering large defects, we prefer loco regional flaps because of the short operative time, short hospital stay, and lower risk of anesthesia-related complications.[17,18] Kentaro Tanaka et al. established an operative mortality index after head and neck reconstruction

with free tissue transfer[17]. Their review demonstrated a 30-day postoperative mortality rate of 0.88% and in-hospital mortality rate of 1.84%. However, in our review, no in-hospital or postoperative mortalities were recorded.

Previously published data have suggested that for patients with significant medical comorbidities, there is an increased risk of complications if the operating time exceeds 10 h. Singh et al. 1999, reported a complication rate of free flap reconstruction up to 28% when anaesthesia time was over 10 hours. The median hospital stay in their study was 16 days, which further increased by 7.5 days ($p< 0.001$) with the development of complications.[19] Whereas in our study, the mean operating time was 137±9.6 minutes, which is significantly less than the time required for free flap reconstruction. Furthermore, the mean length of hospital stay in our study was 5.96±0.8, which reduces the risk of postoperative complications common in hospital settings, especially during the COVID-19 outbreak. No intraoperative complications were observed in this review. Two patients developed small hematomas that were conservatively managed. Both the number and severity of complications compared favorably with those of free flaps.

The limitation of this study was its retrospective design. Additionally, no comparison of locoregional flaps with free flaps was performed during the study.

Figure 3. (A) *Dermatofibrosarcoma at the anterior aspect of the scalp and forehead.* (B) *Defect after excision and burr hole* (C) *Raising the scalp rotation flap.* (D) *Final closure.* (E)*3rd month postoperatively* (F) *Donor site.*

Figure 4. *(A) Post-electric burn scalp defect with osteomyelitis. (B) Defects after debridement and craniotomy. The scalp rotation flap was raised based on the defect. (C) Final appearance in 3rd month. (D)Donor site.*

Conclusion

It is reasonable to suggest that locoregional flaps can be an alternative to free tissue transfer for the reconstruction of large scalp and forehead defects.

Conflict of interest *None*

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Research Article

Microbiology and Antimicrobial Susceptibility Patterns of Wound Cultures of Burn Patients

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Abstract

Background: Antimicrobial susceptibility patterns play an important part in the management of burn wound infections, a common cause of morbidity & mortality. We evaluated the antibiogram of burn wounds at Jinnah Burn and Reconstructive Surgery Center, Lahore, Pakistan which is one of largest burn centers in the country.

Methodology: Retrospective observational study of burn patients. Our study included all kinds of burns and all admitted patients with all ages, total burn surface area 01-80%. Wound cultures and sensitivity done on wounds swabs by culture and disc diffusion methods.

Results: There were 1774 cases included in this study. The most common organism isolated in this study was Pseudomonas species, followed by Acinetobacter species, Klebsiela. Colistin showed best sensitivity against gram negative bacteria isolated in this study. Other antibiotics discs used were Imipenem, Meropenem, Doxycycline, Ciprofloxacine, Levofloxacine, and others

Conclusion: Pseudomonas species is the most common organism found in cultures of burn wounds and Colistin shows best sensitivity results against all bacteria found in our reports including Klebsiella and, Acinetobacter species.

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Keywords | Antibiogram, Acinetobacter, burn wounds, burn center, wound culture.

Introduction

Microbiology and antimicrobial susceptibility patterns play a crucial role in the management of burn wound infections.[1] In the care of burn patients, the identification of the causative microorganisms and their antibiotic resistance profiles is essential for the selection of appropriate empirical and targeted therapy for systemic as well as topical.[2] Despite the advancement of modern wound care practices, infections remain one of the major complications of burn injuries and contribute significantly to morbidity and mortality.[3,4] This article will provide a comprehensive overview of the microbiology and antimicrobial susceptibility patterns of wound cultures in burn patients and its impact on the management of burn wound infections.

According to the World Health Organization (WHO), it is estimated that each year approximately 11 million people suffer from burn wounds, 180,0004. Burn wounds are often colonized by a variety of microorganisms. The most commonly isolated bacteria from burn wound cultures include Pseudomonas aeruginosa, Staphylococcus aureus, Acinetobacter species, Klebsiella species, Enterobacter species, Proteus species, and others.[5] The composition of the burn wound microbiome can be influenced by several factors, including the severity of the burn injury, the type of burn, the presence of underlying comorbidities, and the patient's immune status. In addition, the microbial flora of the burn wound can also be influenced by the type of wound care practices, the use of topical antimicrobial agents, and the duration

of wound care.[6]

The widespread use of antibiotics has already led to the emergence of antibiotic resistant bacteria, including methicillin resistant Staphylococcus aureus (MRSA),[7] extended spectrum beta lactamase (ESBL) producing gram negative bacteria, and carbapenem resistant Klebsiella pneumonia[8] and many other resistant species. The resistance patterns of bacteria isolated from burn wounds can vary depending on the geographical location and the patient population. Gram positive bacteria may be more common[9] in some places than gram negative.[10,11]

The knowledge of the microbiology and antimicrobial susceptibility patterns of burn wound cultures is critical for the management of burn wound infections. Our center has published previous results with Klebsiella species proved to be the most common species in burn wounds[10] and Pseudomonas aeruginosa in intensive care unit.[11] The identification of the causative microorganisms and their antibiotic resistance profiles can aid in the selection of appropriate empirical and targeted therapy,[12] reducing the risk of treatment failure and the spread of antibiotic-resistant bacteria. In addition, the use of topical antimicrobial agents[13] and proper wound care practices can also play a crucial role in preventing and managing burn wound infections.[14,15]

The rationale of this study is to identify the microbiology and susceptibility patterns of wound culture of burn patients. In order to provide effective empiric therapy to newly admitted burn patients.

Methodology

This is a retrospective observational study conducted over eight months starting from 1st June 2022 to 31st January 2023.

Patients admitted in the burn unit, with all ages, both genders and total burn surface areas (range from 1% to 80%), needing surgical management or ICU care or both, were included in this study. Patients with > 80% burns were excluded. Surgical management varied from; doing dressings (conservative management) to wound excision and skin grafting. ICU care is given to critical patients with more than 40% total burn surface area, face burns or any burn surface area along with inhalational injury or electric burn.

Culture and sensitivity reports of all those patients were organized who met the inclusion criteria.

Age, gender, mode of burn injury and total percentage of burns were entered in the patient database software named Hospital Information Management System (HIMS) used in our center.

We took a sterilized culture stick and touched swab part of it to the wound/pus thoroughly until it got wet with moisture/purulent discharge from the wound. Culture sticks were sent to the lab immediately after labeling.

Wound swabs were cultured on Blood, McConkey and Cysteine Lactose Electrolyte Deficient Agar media. Later isolates were cultured on MH agar media. In our institute we use MH agar or nutrient Agar once bacteria is isolated to check their susceptibility. To check sensitivity, we use Kirby Bauer method. In this method, bacteria are placed on a plate of solid growth medium, antibiotic dise are added to the plate and the bacteria allowed to grow overnight. Areas of dear media surrounding the disks indicate that the antibiotic has inhibited bacterial growth.

Results

A total of 1774 cases were found with a total burn surface areas ranging from 01-80% body surface.

Sixteen different kinds of organisms were found in 1774 samples. most common bacteria were Pseudomonas species in 828 (46.7%) cases, and Acinetobacter baumannii in 589 (33.2%) cases. Other bacteria included Klebsiella species in 120 (6.8%)cases, other Acinetobacter species in 93 (5.2%) cases, Proteus species in 37 (2.1%) cases, Staphylococcus aureus in 25 (1.4%) cases, Staphylococcus species (Coagulase negative) in 23 (1.3%) cases, other Gram negative bacilli in 21 (1.2%) cases , Enterobacter species in 16 (0.9%) cases, E.coli (MBL) in 14 (0.8%) cases, Plesiomonas species in 2 (0.1%) cases, Coliform species in 1(0.1%) case, Kluyvera Species in 1 (0.1%) case, Pseudomonas putida in 1 (0.1%) case, and least common were Streptococcus species in 1 (0.1%)case. Candida species was reidentified in 2 (0.1%) cases

Acinetobacter baumannii and other Acinetobacter species were found in a total of 682 (n) samples and combined make a 38.4% of total cases.

The most promising drugs showing sensitivity towards these organisms was Colistin which was checked against 1000 organisms and proved to be sensitive against 911 (94.1%) organisms, followed by Meropenem which was checked against 1160 and proved to be sensitive against 557 (49.5%).

Table 2 gives a detailed description of the effective-

Table 1: *Prevalence of microorganism in Wounds swabs of burn patients.*

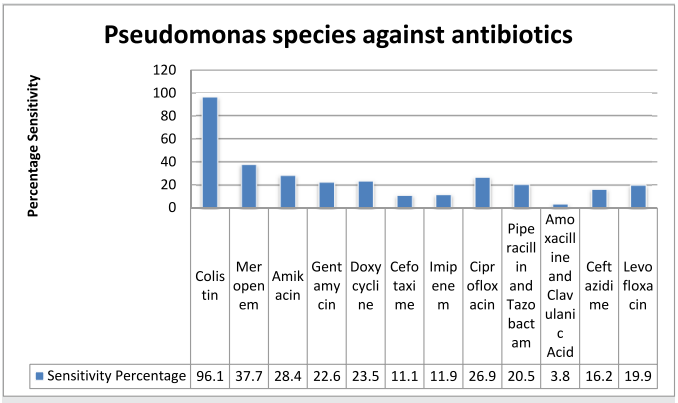
Name of Bacteria/Organism	Frequency	Percent
Pseudomonas species	828	46.7
Acinetobacter baumannii	589	33.2
Klebsiella species	120	6.8
Acinetobacter species	93	5.2
Proteus species	37	2.1
Staphylococcus aureus	25	1.4
Staphylococcus species (Coagulase negative)	23	1.3
Gram negative bacilli	21	1.2
Enterobacter species	16	.9
E.coli (MBL)	14	.8
Candida species(Non albicans)	2	0.1
Plesiomonas species	2	0.1
Coliform species	1	0.1
Kluyvera Species	1	0.1
Pseudomonas putida	1	0.1
Streptococcus species	1	0.1
Total	1774	100.0

Table 2: *Sensitivity of four most common organisms found in this study against several antibiotic preparations*

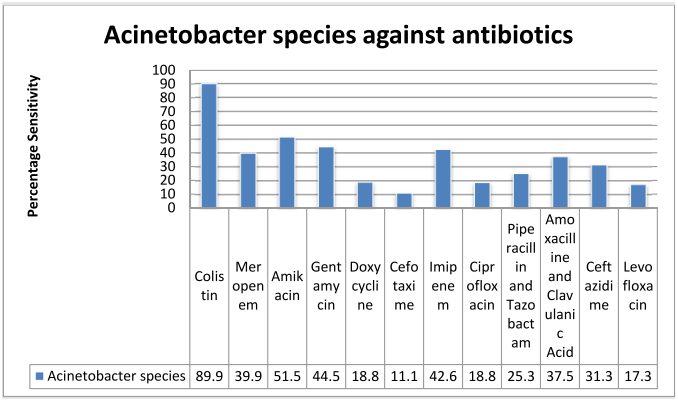
		Resistant (n)	Sensitive (n)	Total (n)	Percentage of Sensitivity %)
		Colistin		Total	
Bacteria	Pseudomonas species	23	570	593	96.1
	Klebsiella species	4	86	90	95.5
	Acinetobacter species	0	47	47	100
	Acinetobacter baumannii	32	238	270	88.1
Total		59	941	1000	94.1
		Meropenem		Total	
Bacteria	Pseudomonas species	373	226	599	37.7
	Klebsiella species	25	23	48	47.9
	Acinetobacter species	48	37	85	43.5
	Acinetobacter baumannii	157	271	428	63.3
Total		603	557	1160	48.0
		Amikacin		Total	
Bacteria	Pseudomonas species	430	171	601	28.4
	Klebsiella species	33	27	60	45
	Acinetobacter species	58	24	82	29.2
	Acinetobacter baumannii	178	227	405	56.0
Total		699	449	1148	39.1
		Gentamycin		Total	
Bacteria	Pseudomonas species	452	132	584	22.6
	Klebsiella species	33	25	58	43.1
	Acinetobacter species	54	21	75	28
	Acinetobacter baumannii	214	194	408	47.5
Total		753	372	1125	33.0
		Ceftriaxone		Total	
Bacteria	Pseudomonas species	10	2	12	16.6
	Klebsiella species	31	8	39	20.5
	Acinetobacter species	64	14	78	17.9
	Acinetobacter baumannii	193	126	319	39.4
Total		298	150	448	33.4
		Doxycycline		Total	
Bacteria	Pseudomonas species	13	4	17	23.5
	Klebsiella species	18	11	29	37.9
	Acinetobacter species	62	9	71	12.6
	Acinetobacter baumannii	337	173	510	33.
Total		430	197	627	31.4
		Cefotaxime		Total	
Bacteria	Pseudomonas species	8	1	9	11.1
	Klebsiella species	24	9	33	27.2
	Acinetobacter species	30	8	38	21.0
	Acinetobacter baumannii	169	72	241	29.8
Total		231	90	321	28.0
		Imipenem		Total	
Bacteria	Pseudomonas species	524	71	595	11.9
	Klebsiella species	31	15	46	32.6
	Acinetobacter species	53	21	74	28.3
	Acinetobacter baumannii	223	184	407	45.2
Total		831	291	1122	25.9
		Ciprofloxacin		Total	
Bacteria	Pseudomonas species	539	199	738	26.9
	Klebsiella species	72	25	97	25.7
	Acinetobacter species	68	12	80	15
	Acinetobacter baumannii	410	99	509	19.4
Total		1089	335	1424	23.5
		Piperacillin and Tazobactam		Total	
Bacteria	Pseudomonas species	499	129	628	20.5
	Klebsiella species	48	13	61	21.3
	Acinetobacter species	48	26	74	35.1
	Acinetobacter baumannii	282	86	368	23.3
Total		877	254	1131	22.4
		Amoxaciline and Clavulanic Acid		Total	
Bacteria	Pseudomonas species	100	4	104	3.8
	Klebsiella species	66	12	78	15.3
	Acinetobacter species	2	0	2	0
	Acinetobacter baumannii	43	27	70	38.
Total		211	43	254	16.9
		Ceftazidime		Total	
Bacteria	Pseudomonas species	371	72	443	16.2
	Klebsiella species	2	0	2	0
	Acinetobacter species	2	2	4	50
	Acinetobacter baumannii	86	38	124	30.
Total		461	112	573	19.5
		Levofloxacin		Total	
Bacteria	Pseudomonas species	527	131	658	19.9
	Klebsiella species	52	10	62	16.1
	Acinetobacter species	70	10	80	12.5
	Acinetobacter baumannii	375	83	458	18.1
Total		1024	234	1258	18.6

ness of all the antibiotics checked in this study.

Graphs 1 and 2 show the antibiotic susceptibility pattern of pseudomonas species & Acinetobacter species, 2 of the most common organisms isolated in our cultures.



Graph 1: *Sensitivity bar chart of Pseudomonas species against various antibiotics*



Graph 2: *Sensitivity bar chart of Acinetobacter species against various antibiotics*

Discussion

The most common pathogens were gram negative bacteria, most common being Pseudomonas species, unlike our previous study in which Klebsiella species were most common organisms[8,10]. Our study clearly shows that prevalence of gram positive bacteria is not commonly seen compared to other studies in similar patients at other centers[1]. Acinetobacter baumannii and other species of Acinetobacter are emerging as a big challenge in management of burn patients. Organism is notorious for growing on flat surfaces and making biofilms.[16]

Colistin is still the most potent antibiotic against these gram negative bacteria but with the passage of time the resistance against this antibiotic has also been observed. The total number of samples resistant to Colistin is 70 (n) out of total 1037 samples checked against it, which is 6.8%. Emergence of resistance to Colistin will bring new challenges in the coming years. Colistin is a last resort antibiotic used for treating infections caused by resistant bacteria. The emergence of Colistin resistance has limited our treatment options for life threatening infections. The development of new antibiotics and better infection control measures are necessary to curb the spread of Colistin resistance. Unfortunately Acinetobacter species have become most resistant against Colistin. We found 32 (10.1%) samples of Acinetobacter species resistant against Colistin. Also the Acinetobacter has become a huge challenge as it is found in 682 cases which was not found resistant to drugs like Colistin in previous study[5,10].

The second most potent antibiotic is Meropenem which is not even sensitive to 50% of samples included in this study, total number of samples resistant to it are (603 out of 1160) samples checked against it, so a 52% samples were resistant to this antibiotic. Amikacin is often considered as a good choice in absence and or during waiting period of culture sensitivity reports.[17] In our center, it has shown resistance to 699 (n) samples out of 1148 samples checked against it, which shows 59.9% resistance to samples.

Conclusion

Pseudomonas species were most common organism isolates in our study, followed by Klebsiella and Acinitobacter, and Colistin remains the most potent antibiotic against bacteria in our study followed by Meropenem.

Conflict of interest *None*

Funding Source *None*

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Research Article

Pre-Auricular Composite Adipo-cutaneous Graft for Coverage of Small Nasal Defects Post BCC Excision

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Abstract

Background: Small partial thickness nasal defects may be reconstructed with a skin graft or loco-regional flap. Grafts often result in contour deformities, and flaps are often too much for these small defects. Also, it is difficult to match flap thickness with the defect. In such cases, composite adipo-cutaneous grafts provide better contour match and aesthetic appearance and are also technically easier to perform. We present our experience of using these grafts in patient with nasal defects.

Methodology: This prospective study was done over a 1-year period from 1st July 2021 till 30th June 2022 at Mayo hospital Lahore and Iqra Medical Complex, Lahore. Patients with nasal lesions with expected defect size of 1.5 × 1.5 cm were included. Under local anesthesia, excision of lesion and coverage with composite adipo-cutaneous graft was done. Graft take was assessed on 7th post-operative day. At one month follow-up, aesthetic outcomes in terms of pigmentation and contour deformity were assessed as Good, fair, or poor. Patient satisfaction was also assessed and recorded.

Results: the total number of patients was 10. Of these, 80% had excellent or good graft take. 70% had excellent/good color match and 90% had excellent/good contour match. All patients reported being satisfied with the results. There were no donor site complications.

Conclusion: composite adipo-cutaneous grafts provide a useful reconstructive option for small deep defects on the nose

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Keywords | nasal lesions, composite graft, contour deformity

Introduction

Cutaneous malignancies are the most common malignancy seen worldwide, and are continuously on the rise.[1] Amongst them, Basal cell carcinoma (BCC) is the most common, followed by squamous cell carcinoma, malignant melanoma and other rare skin tumors.[2] The face is the most affected body part for BCCs and surgical resection is the first line of treatment[3]. Such resections, even when the lesions are quite small, leave a 3-dimensional defect. While in other parts of face, the relative skin laxity allows for the possibility of primary closure, such is not the case for the nose, and reconstruction is often required.

There are many possibilities of reconstructing a nasal defect. A full thickness skin graft provides a good color match and is simple and versatile in application.[4] However, there's often a contour deformity present which may necessitate elevation of depressed scar with micro-lipoinjectons later.[5] These defects may be reconstructed with local flaps such as the bilobed, banner, and dorsal nasal flaps.[6] These local flaps are often limited for use in certain subunits within the nose. Also they add more scars to the face, come of which may lead to the pincu-

shioning effect in the long run.[7]

Composite grafts are an established modality for reconstruction of certain defects, with improved graft survival when certain measures are strictly followed.[8,9] Few studies have been done on utilizing composite skin fat grafts for reconstruction of facial defects, and have shown promising results[10,11]. In lieu of the above points, we propose that an adipocutaneous composite graft is a worthwhile solution for small relatively deep defects of the nose. It com bines the versatility and ease of har-vest of a skin graft, with a better contour match as is seen with a flap. The objective of this study is to observe the clinical and aesthetic outcomes of using a pre-auricular composite adipo-cutaneous skin graft for reconstruction of small nasal defects.

Methodology

This was a prospective study done at Mayo Hospital Lahore and Iqra medical complex, Lahore over a period of 1 year from 1st July 2021 till 30th June 2022. Adult patients (>18 years of age) with nasal skin lesions requiring excision with expected defect size of up to 1.5×1.5 cm were selected from the Out-Patient Department and included in the study. Patients with uncontrolled comorbid conditions such as diabetes, hypertension or ischemic heart disease were excluded.

After standard preoperative testing, patients were scheduled for surgery. All procedures were performed under local anesthesia. The lesion was excised and meticulous hemostasis secured. After excision of lesion, an exact template of the defect was made. A composite adipocutaneous graft was harvested according to the size of template. Graft was secured with fine sutures and a bolster dressing placed (Figure 1).

1st dressing was opened on the 7th post-operative day and graft take assessed and graded as follows: Excellent (91-100%), Good (81-90%), Fair (71-80%) or Poor (<70%). Any complications present were also noted and recorded. Aesthetic outcomes were assessed at the 3-month follow-up visit on two parameters, pigmentation and contour match, and recorded as excellent, good, Fair or poor. Patient satisfaction was also assessed at this visit, and recorded as satisfied or unsatisfied.

Results

The total no. of patients was 10, out of which 6 were females, and 4 were males. The mean age was 58.9 years (range 50 – 65 years). The diagnosis in all patients was BCC. Average defect size was 1.47cm (taken as the mean of the largest dimension of defect). 5 patients (50%) had more than 90% graft take, and a further 3 patients (30%) had 81 -90% graft take. 3 patients had excellent color match, and 4 had good color match. Regarding contour match, 3 patients had excellent contour match, and 6 patients had good contour match. None of patients fell into the category of poor graft take, or poor color or contour match. The clinical outcomes are detailed in table 1 and table 2.

All patients reported being satisfied with the visible results. There were 2 patients who had partial graft loss and were in the category of 71 – 80% graft take. One patient had hypertension and had required change of dressing on 2nd post-op day due to soakage. There was a small hematoma that necessitated evacuation and resulted in decreased graft take. The second patient developed recipient site infection, which improved with oral antibiotics and wound care measures. None of the patients had any donor site complications.

Figures 1 and 2 demonstrate the technique and results (respectively) on 2 such patients.

Table 1: *Graft take as assessed on 7th post-operative day.*

Graft take on 7th POD	n (%)
Excellent (90 -100%)	5
Good (81 – 90%)	3
Fair (71 – 80%)	2
Poor (< 70%)	0

Table 2: *Aesthetic outcomes of the patients*

Clinical characteristic	Excellent (n)	Good (n)	Fair (n)	Poor (n)	Total (n)
Color match	3	4	3	0	10
Contour match	3	6	1	0	10

Figure 1: *a) marking for excision of lesion and for the preauricular graft, b) after excision of lesion, c) immediately post-op, and d) bolster dressing in place*

Figure 2: *a) lesion on root of nose, b) excision marking, c) graft in place, d) bolster dressing in place, and e) at 3 months post-operatively*

Discussion

The nose is the most prominent part of the face. Therefore, even mild deformities are less tolerated by the patient. The diagnosis of malignancy, compounded with the surgical treatment leading to scars affects the quality of life of affected individuals[12]. Considering the aesthetical importance of the nose on the face, it is pertinent that any planned reconstruction should aim to restore 'form' as best as possible. The utilization of a composite graft provides adequate coverage with a better contour than a simple skin graft would. Furthermore, no additional scar marks are added in the surroundings of the defect.

Composite grafts such as chondrocutaneous and dermofat grafts are already in use for various reconstructive needs[8]. A major drawback of composite grafts is the higher risk of graft loss. In our study, the graft take is good or excellent in >80%, which is comparable to other studies performing similar reconstruciton[10,13].

Interestingly, patients had fewer complications which are classically attributed to composite skin-cartilage grafts, such as infection and necrosis. In our study one of the ten patients developed infection (10%) whereas a similar study on chondro-cutaneous grafts have found a complication rate of upto 20%[14]. This could be explained by the fact that very small defects were chosen in this study. According to eto et al[15], the 3-zone theory for transferred fat states that the peripheral zone, which is 300µm in thickness is the survival zone in which all the grafted fat would survive. With very small defects, most of the fat will fall in this category.

In our study 70% of patients had an excellent/good color match, whereas 90% reported having an excellent/ good contour match. This is by far the major advantage of a thickness matched adipocutaneous graft over the conventional skin graft[16].

The limitations of this study are its very small sample size, and short follow-up. A larger study with a longer follow-up duration will provide valuable data on the longevity of the results of this technique, specifically in term of sustained contour match to the surrounding tissue.

Conclusion

Wide local excision of BCC lesions result in a small but three-dimensional defect, often on the aesthetically important region of the nose. Composite adipocutaneous grafts provide a useful reconstructive option for such nasal defects, in terms of better color and contour match, with an acceptable rate of graft take.

Conflict of interest *None*

Funding Source *None*

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Case Series

Dermatofibrosarcoma with Multiple Recurrences Revisited a Case Series with Review of Literature

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Abstract

Background: Dermatofibrosarcoma protuberans (DFSP) is a rare, low to moderate grade sarcoma with protuberans-like growths. It usually starts from the dermis and invades the subcutaneous tissue, primarily on the trunk and limbs. It frequently occurs locally. It is uncommon for distant metastasis to occur. Common lesions are initially assumed to lead to misdiagnosis due to the superficial look of DFSP. Imaging techniques are not always used, and their correct management is delayed.

Methodology: A retrospective study of six patients with recurrent DFSP treated at our institution during the previous four years was conducted, with a focus on disease outcome, recurrence rates and during follow up disease-free intervals.

Results: Mean age was 37.5 years. Male to female ratio was 1:2. The tumor size ranged from 5 to 15 cm. treatment included local excision with post op radiotherapy in four patients and excision alone in 2 patients. All the patients remained disease-free in the follow-up period.

Conclusion: Vigorous, surgical resection with disease-free margins and post op management with or without radiation, minimizes recurrence and offer good results. As late recurrences may occur, literature supports that all patients with DFSP should be observed for more than 5-yrs.

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Keywords | DFSP, wide local excision, Soft tissue sarcoma and Dermal sarcoma

Introduction

Dermatofibrosarcoma protuberans (DFSP) is an uncommon type of spindle cell tumor. This lesion typically spreads from dermis to the subcutaneous tissues and muscles.[1] Dermatofibrosarcoma usually affects the trunk (50%) and extremities (30-40%), with the head and neck accounting for 10-15% of cases.[2] It can, however, be found anywhere in the body.[3] The global annual incidence was 4.2 per million people.[4] According to Scott et al,[5] Caucasian population has about half the incidence of the Afro-Caribbean population (3.9 and 6.5 per million respectively). The most prevalent age of presentation is 30 to 50 years, and throughout our literature search, we discovered that males have a higher prevalence of DFSP than females. According to one study by Criscione and Weinstock, women are more likely to be impacted by this tumor.[4]

Dermatofibrosarcoma has a low proclivity to metastasis but local recurrence is high. Mostly lungs are prevalent location of hematogenous metastasis. Regional lymph nodes are rarely impacted. The imaging characteristics of DFSP are not particularly specific, but they can contribute in its evaluation and diagnosis. Imaging techniques such as ultrasound scan, CT scan and MRI, have also been useful in preoperative evaluation in studies. Typical ultrasonography findings include mixed hyperechoic or hypoechoic lesions, with well-defined edges.[6] Only histological and immunohistochemical analysis can provide a conclusive diagnosis.[7] Morphological examinations of DFSP revealed very uneven borders with finger-like extension into surrounding and deep tissues. DFSP is made up of monomorphic spindle cells organi-

zed in a storiform pattern (of closely packed fibroblasts arranged radially) with fibrous stroma and sparse cytoplasm (Figure 1). Mitoses are rare. In contrast to dermatofibroma, the overlying epidermis is generally thin. A mitotic count of 10/10 HPF and tumor size are associated with meta-static dissemination.[8,9] CD34 staining is significantly positive in DFSP. It is also vimentin immunoreactive. CD44, which is a valuable marker for dermatofibroma, is negative for DFSP.

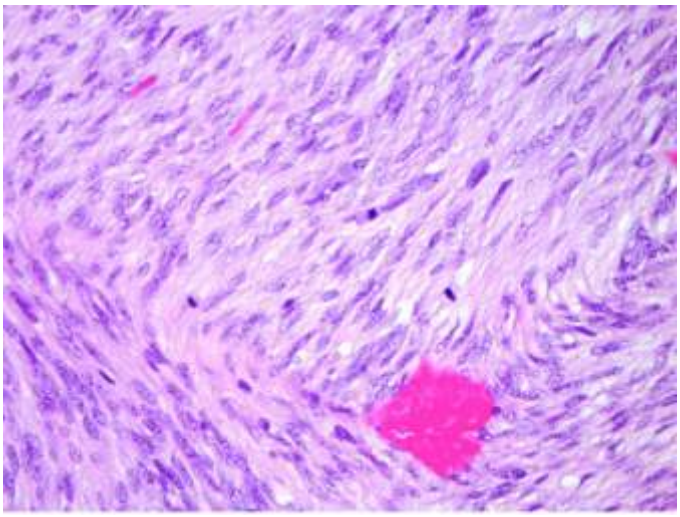

Figure 1: *Histological Pattern in DFSP*

There is no currently established predisposing factor for the development of Dermatofibrosarcoma. An in-depth understanding of tumor biology and the pattern of infiltration into surrounding tissues is required for effective treatment. DFSP spreads horizontal by producing pseudopodia, which are neoplastic projections in all directions. This causes ejection of satellite neoplastic cells peripherally from the main tumor up to 3 cm and cause significant morbidity after resection.[10,11]

Multidisciplinary team is required for the effective management, with special contribution by oncologist. The average DFSP recurrence rate with simple tumor removal is roughly 20%, while it is 1% with Mohs micrographic surgery. Wide excision or MMS are the two basic surgical procedures but the precise safety margins for broad excision are still undecided. The recommended excision margins range from 1 to 5 cm by German Society of Oncology and the German Society of Dermatology. However, there are no definite suggestions. The European consensus proposes 3 cm margins. The National Comprehensive Cancer Network issued clinical practice guidelines in oncology for dermatofibrosarcoma protuberans that propose 2 to 4cm margins for fascia investment in case of wide local excision. This signifies the excision of deep fascia in improving disease-free survival. MMS is a procedure that provides histological control while causing the least amount of tissue damage. The NCCN guidelines do not advocate for any one approach. Micrographic processes, on the other hand, are time-consuming and necessitate the use of specialized equipment and skilled personnel. Furthermore, complex or big tumors may be respectable alone or in combination with extensive excision.

Methodology:

From January 2019 to June 2022, all patients with recurrent DFSP who were treated at our hospital underwent a retrospective chart review. All patients who were still alive were contacted to inquire about their current condition. H&E staining confirmed the diagnosis of DFSP in all individuals. Wide local excision with a minimum 3-5 cm margin, including the underlying fascia under frozen section control where possible, was used for surgical treatment. Patients with big lesions or narrow margins were given adjuvant radiation therapy following wide resection. The specifics of radiotherapy were not studied. Medical records revealed patients' demographics (gender, age), tumor features (size, location), evolution (site and period of recurrence), and follow-up.

CASES:

Case 1:

A 41-years old male smoker presented with a complaint of recurrent chest wall swelling (Figure 2). 10 years back pt first presented with progressively enlarging painless chest swelling which was excised and biopsy showed derma-tofibrosarcoma with incomplete resection. After 1 year, swelling reappeared and excised again. Soon after that, the swelling reappeared, remained static and painless for several years, but rapidly increasing in size and becoming painful after blunt trauma. There was No history of any discharge or ulceration. No associated fever or weight loss. Examination showed Irregular swelling with well-defined edges on the middle to left side of the sternum measuring 15×10 cm, with normal temperature of overlying skin, firm to hard consistency, non-reducible, non-compressible, non-pulsating, not fixed to underlying tissue, and ulceration of overlying skin. Local LN were negative. No other swelling in rest of body. CCT showed lobular soft tissue enhancing mass ventral to sternum not attached to underlying muscle. Wide local excision of tumor with 5 cm resection margins under frozen section control. Pectoralis major advance-ment flap with STSG was used for reconstruction. (Figure 3)

Figure 2: *Preop and f/u images*

Figure 3: *Intraoperative images showing Pectoralis major advancement flap and STSG*

Case 2:

A 17-yrs-old female had a recurrent mass of 2×3 cm, k/c biopsy-proven DFSP on the scalp in the occipital region with incomplete resection margins. Previous excision was performed 1 year back in the periphery. A wide local excision with 4 cm margin was performed under frozen section control, a rhomboid flap was performed.(Figure 4) Patient referred to oncologist. But radiotherapy was not advised due to complete tumor resection. After 5 months, patient developed areas of non-healing wound. Again, Rotational flap was performed after debridement.

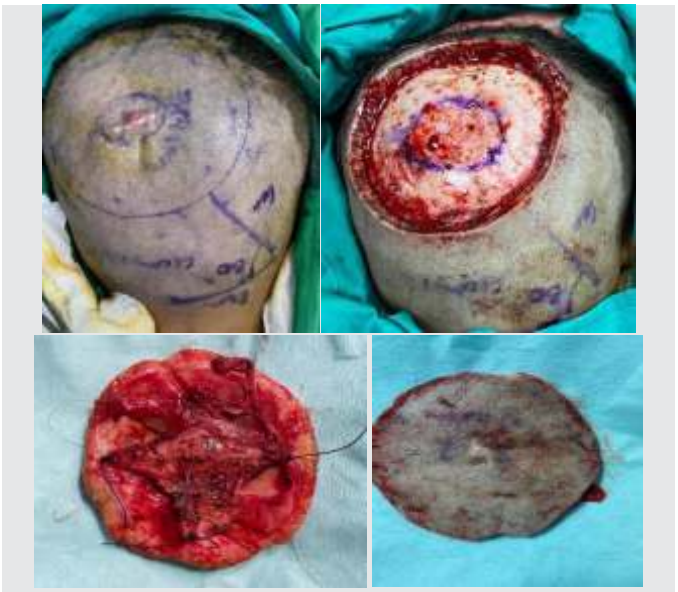

Figure 4: *Excision of Lump From Scalp*

Case 3:

A 52-year-old male presented with a recurrent right anterior shoulder lumps that had previously been excised three times at an interval of approximately 1 year. Excision biopsy of last mass showed dermatofibrosarcoma. Pt was advised for postop radiotherapy but was reluctant. After 6m of last excision multiple small swellings reappeared which were increasing rapidly in size. There was no associated pain or restricted movement of shoulder joint. Contrast enhanced CT scan demonstrated multinodular round to oval hypodense lumps arising fromdermis and extending in subcutaneous plane. Lumps were displacing adjacent muscles(Figure 5). Wide excision of lesion done followed by reconstruction with STSG. (Figure 6)

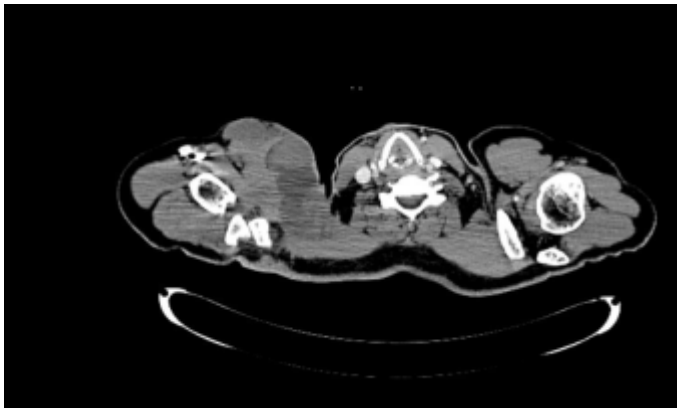

Figure 5: *CCT: Hypodense Masses On Left Pectoral Area*

Figure 6: *Intraoperative Images Showing Multiple Lumps At Pectoral Area, Reconstruction With Stsg*

Case 4:
A 64-yrs-old woman presented with a recurrent 5×5 cm anterior right knee mass involving skin and subcutaneous tissue extending into the retropetellar space, last excised 1 month ago under frozen section with incomplete resection margins. Wide local excision performed with 3 cm margins under frozen section control, and AMT flap done. Patient referred to oncologist for radiotherapy. In follow up period, distal 30% of the flap was compromised, debridement done and the wound was primarily closed.

Figure 7: *Preop and post op image; pre op image showing excision mark of previous surgery*

Case 5:
A 10-year-old female presealed with a recurrent right anterior chest nodular mass, biopsy-proven DFSP, which was excised 1m back with incomplete resection margins. Pt referred by oncologist for complete removal of DFSP. Wide local excision performed with 2 cm resection margins. Radiotherapy was given in postop period.

Case 6:
A 42 year old female presented with a recurrent mass on her left shoulder that was gradually enlarging and asso-ciated with shoulder and arm pain. History dated back 15 years back when she first noticed a papule at her shoulder, which enlarged gradually with indurated margins, misdiagnosed as keloid. It was excised earlier at a tertiary care hospital and biopsy taken which showed DFSP. Re-excision performed with 4 cm resection mar-gins and the wound was closed primarily. (Figure 8) Patient referred to oncologist but radiotherapy was not performed due to complete resection of tumor.

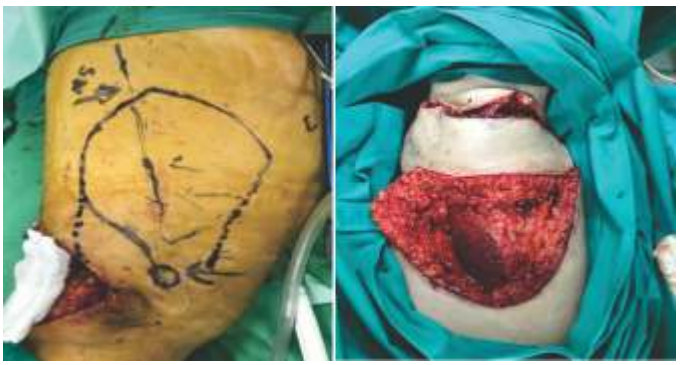

Figure 8: *Excision of Left Shoulder Mass*

Results

Six patients were identified with recurrent DFSP from January 2019 to June 2022. The average age of the patients was 37.5 years (10-64 years). All patients characterized their preoperative symptoms as long (more than 1 year). There were four women and two men in the group. The tumor was seen on the trunk, scalp and proximal limbs. The tumor's size ranged from 5 to 15 cm.

All patients had a history of previous resection and local recurrence, and they were all associated with very close or positive margins. No metastasis was observed in any case. In all cases, extensive local excision with 3-5cm margins done.

Local flaps were used to reconstruct the deformities in three cases and skin grafting in other three patients. In four cases, adjuvant radiation was administered. Table 1 demonstrate the clinical details of all the patients.

Discussion:

Dermatofibrosarcoma is well- differentiated, fibrosarcoma of skin. It's a rare low- to intermediate-grade mesenchymal malignancy, begins in the dermis and frequently spread to the subcutaneous tissue[12,13]. It represents 1 to 2% of all sarcomas[14]. According to Lindner et al.[15], DFSP is distinguished by slow, indolent but infiltrative development pattern, and its symptoms can linger for up to 30 yrs. Previous trauma is described

Table 1: *Demographic and clinical details of the patients*

Sr. No.	Age	Gender	Size	Area	Excision Margins	Reconstruction	Adjuvant radiotherapy
1.	41/years	Male	15x10cm	Chest	5cm	Pectoralis major advancement flap & STSG	No
2.	17/years	Female	2x3cm	Scalp	4cm	Scalp rotation flap	No
3.	52/years	Male	Multiple swellings	Right Shoulder	5cm	STSG	Yes
4.	64/years	Female	5x5cm	Right knee	3cm	AMT Flap	Yes
5.	10/years	Female	Linear scar	Chest	2cm	Primary closure	Yes
6.	42/years	Female	Linear scar	Shoulder	4cm	Primary closure	No

in 10-20% of cases, and some cancers have been discovered in surgical scars and others in burns.[16] DFSPs show as purple-red or pink indurated plaques with telangiectatic surrounding skin.[17,18] Multiple elevated violaceus eventually grow into reddish-brown nodules. They grow slowly and can reach several centimeters in diameter. The atrophic form appears as a purple plaque that resembles a morphea or a scar. The tumor, especially in its early stages, might resemble a keloid or dermatofibroma and is frequently misdiagnosed. Some of them may ulcerate and become painful as they grow larger. They exhibit nodular development pattern in late stages.[19] Small tumors are mobile, but they become fixed due to invasion of the underlying fascia as they grow larger. Clinically, the maximum diameter of most DFSPs is less than 5 cm. Differential diagnosis for plaque stage are sclerosing dermatoses such as morphea or scleroderma or scar.[20] Intermediate lesions could be mistakenly take as bigger dermatofibromas, whereas advanced lesions can be confused with fibrosarcoma and malignant fibrous histiocytoma.[21]

It commonly develops in 40's, though the age of onset varies greatly. In the current study, the tumor exhibited a slight different age distribution to conventional DFSP, with female predominance. In current dataset, DFSP commonly presented on the trunk, followed by the extremities, and finally the head and neck.

85 percent of cases have a more indolent course and a low risk of metastasis, indicating characteristic DFSP. 15% are classified as more aggressive "high-grade" fibro-sarcomatous type (FS-DFSP).

Atrophic, Bednar's tumor (pigmented DFSP), sclerosing, myxoid and mixed granular cell are all less common DFSP variations. A congenital variation with distinct histology markers has also been discovered.

Dermatofibrosarcoma is caused by germline mutation, in more than 90% of cases. The gene for collagen 1A1 is linked to the gene for PDGF-chain in the translocation (17;22). As a result of this uncontrolled expression of PDGFB, an enzyme called PDGFR protein tyrosine kinase is constantly activated, and proliferation of tumor cells occur. Due to unregulated ligand expression, this rearrangement results in constitutive activation of PDGF.[22] Targeted therapy with Imatinib mesylate, a platelet derived growth factor inhibitor, has been demonstrated to enhance radiological as well as clinical outcomes in patients with unresectable and locally advanced disease and approved by US- FDA. However, withdrawal of the drug is followed by regrowth of the tumor, so use of this agent is lifelong. The post-natal alterations are not inherited and are solely observed in cancerous cells.

Dermatofibrosarcoma protuberans has a good prognosis.99.1% patients survive for more than 10-yrs. Because metastases are uncommon, morbidity from recurrence is more common. Age beyond 50 years old is a risk factor for local recurrence. Patients with metastatic illness live an average of roughly two years after diagnosis. Male gender, black race, increased cellularity, high mitotic index, and position on the head and neck are all risk factors for death.

Conclusion

In conclusion, DFSP is a separate oncologic entity that frequently poses a diagnostic issue. Clinically, accurate identification and diagnosis are critical. Negative margins after complete surgical resection is the mainstay of DFSP treatment. To improve the prognosis over time, the tumor should be excised with at least 3-5 cm of normal tissue, extending deep into the histological anatomical tissue free of illness. Furthermore, close follow-up for long-term cancer follow-up is required, as late recurrences may arise.

Conflict of interest *None*

Funding Source *None*

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Editorial

Artificial Intelligence in Plastic Surgery

Muhammad Mustehsan Bashir, Saadia Nosheen Jan

Introduction

Plastic surgery might be considered relatively archaic by now, but it is still one of the incessantly evolving subspecialties, churning out multiple solutions and innovations for a single problem. Creativity is inherent to its nature as the quest for perfection is an asymptote that haunts all plastic surgeons. During its search for the Holy Grail, Plastic Surgery has stumbled upon Artificial Intelligence (AI) as a panacea for many of its ambitions. AI has found a comfortable niche in the plastics armamentarium. Currently, AI is being used in Plastic Surgery to read and analyze images and scans for diagnosis and planning of plastic surgical cases. Additionally, algorithms reveal expected outcomes of plastic surgery procedures and predict the final prognosis after treatment. Artificial Intelligence has allowed bespoke treatment plans based on patient parameters resulting in much better and holistic management. For the Plastic Surgery trainee life does not end with the ChatGPT. Artificial Intelligence software has been developed to allow simulating plastic surgery procedures, much like flight simulators for trainee pilots. Trainees can practice plastic surgery procedures enhancing their performance and reducing margin for error in actual surgeries. Senior surgeons can experiment with new techniques hone and analyze their methods. However, despite the panache with which AI has entered the realms of Plastic Surgery, whether or can fully replace traditional training, diagnostic and prognostic methods is still debatable.

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(Base upon Minimum Requirements for Writing and Editing of Manuscripts)

Introduction

The new Editorial Board of Pakistan Journal of Plastic Surgery during its meeting held on January, 2019 decided to follow the "Uniform requirements for manuscripts submitted to Biomedical Journals: writing & Editing for Biomedical Publications by International Committee of Medical Journal Editors. A brief account of minimum requirements is given below for assisting the authors, reviewers and editors, the full text can be read, (www.icmje.org). Moreover plagiarism policy of ICMJE, Higher Education Commission and PMDC will be observed. It is authors' responsibility to apprise them of plagiarism in any form including paraphrasing and self plagiarism. The Plagiarism Standing Committee of Pakistan Journal of Plastic surgery would deal with cases of plagiarism and comprise of staff members, and editors. Those claiming intellectual/ idea or data theft of an article must provide documentary proof in their claim otherwise their case will be sent for disciplinary action.

General Principles

1. Title Page

The title page should carry the following information:

1. The title of the article. Concise titles are easier to read than long, convoluted ones. Authors should include all information in the title that will make electronic retrieval of the article both sensitive and specific.
2. Authors' names and Title of the Program. The names and other relevant information should be on title page only to ensure blind peer review of research article.
3. The name of the department(s) and institution(s) to which the work should be attributed.
4. Disclaimers, if any.
5. Corresponding authors. The name, mailing address, telephone and fax numbers, and e-mail address of the author responsible for correspondence about the manuscript.
6. Source(s) of support in the form of grants, equipment, drugs, or all of these.
7. Word counts. A word count for the text only (excluding abstract, acknowledgments, figure legends, and references). A separate word count for the Abstract is also useful for the same reason.
8. The number of figures and tables.
9. Conflict of Interest Notification Page

2. Conflict of Interest Notification Page

To prevent the information on potential conflict of interest for authors from being overlooked or misplaced, it is necessary for that information to be part of the manuscript. It should therefore also be included on a separate page or pages immediately following the title page.

3. Abstract and Key Words

An abstract (requirements for length and structured format vary by journal) should follow the title page. The abstract should provide the context or background for the study and should state the study's purposes, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations.

Authors are requested to provide, and identify as such, 3 to 10 key words or short phrases that capture the main topics of the article. These will assist indexers in cross-indexing the article and may be published with the abstract. Terms from the Medical Subject Headings (MeSH) list of Index Medicus should be used.

4. Introduction

Provide a context or background for the study (i.e., the nature of the problem and its significance). State the specific purpose or research objective of, or hypothesis tested by, the study or observation; the research objective is often more sharply focused when stated as a question. Both the main and secondary objectives should be made clear, and any pre-specified subgroup analyses should be described. Give only strictly pertinent references and do not include data or conclusions from the work being reported.

5. Material and Methods

The Methods section should include only information that was available at the time the plan or protocol for the study was written; all information obtained during the conduct of the study belongs in the Results section.

(a) Selection and Description of Participants

Describe your selection of the observational or

experimental participants (patients or laboratory animals, including controls) clearly, including eligibility and exclusion criteria and a description of the source population. The guiding principle should be clarity about how and why a study was done in a particular way. When authors use variables such as race or ethnicity, they should define how they measured the variables and justify their relevance.

(b) Technical Information

Identify the methods, apparatus (give the manufacturer's name and address in parentheses), and procedures in sufficient detail to allow other workers to reproduce the results. Give references to established methods, including statistical methods (see below); provide references and brief descriptions for methods that have been published but are not well known; describe new or substantially modified methods, give reasons for using them, and evaluate their limitations. Identify precisely all drugs and chemicals used, includ-ing generic name(s), dose(s), and route(s) of administration. Also describe diagnostic or therapeutic procedures if part of the study design.

(c) Statistics

Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals). Define statistical terms, abbreviations, and most symbols. Specify the computer soft-ware used.

6. Results

Present your results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Do not repeat in the text all the data in the tables or illustrations; emphasize or summarize only important observations.

When data are summarized in the Results section, give numeric results not only as derivatives (for example, percentages) but also as the absolute numbers from which the derivatives were calculated, and specify the statistical methods used to analyze them. Restrict tables and figures to those needed to explain the argument of the paper and to assess its support. Use graphs as an alternative to tables with many entries; do not duplicate data in graphs and tables.

7. Discussion

Emphasize the new and important aspects of the study and the conclusions that follow from them. Do not repeat in detail data or other material given in the Introduction or the Results section. For experimental studies it is useful to begin the discussion by summarizing briefly the main findings, then explore possible mechanisms or explanations for these find-ings, compare and contrast the results with other relevant studies, state the limitations of the study, and explore the implications of the findings for future research and for clinical practice.

Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not adequately supported by the data. Avoid claiming priority and alluding to work that has not been completed. State new hypotheses when warranted.

8. References

(a) General Considerations Related to References

Although references to review articles can be an efficient way of guiding readers to a body of literature, review articles do not always reflect original work accurately. Small numbers of references to key original papers will often serve.

Avoid using abstracts as references. References to papers accepted but not yet published should be designated as “in press” authors should obtain written permission to cite such papers as well as verification that they have been accepted for publication. Informa-tion from manuscripts submitted but not accepted should be cited in the text as “unpublished observations” with written permission from the source.

Avoid citing a “personal communication” unless it provides essential information not available from a public source, in which case the name of the person and date of communication should be cited in parentheses in the text. For scientific articles, authors should obtain written permission and confirmation of accuracy from the source of a personal communication.

For articles published in journals indexed in MEDLINE, the Pakistan Journal of Plastic Surgery considers PubMed (http://www.pubmed.gov) the authoritative source for information about retractions.

(b) Reference Style and Format

The Uniform Requirements style is based largely on an ANSI standard style adapted by the National Library of Medicine (NLM) for its databases. For samples of reference citation formats, authors should consult National Library of Medicine web site.

References should be numbered consecutively in the order in which they are first mentioned in the text. Identify references in text, tables, and legends by Arabic numerals in parentheses. The titles of journals should be abbreviated according to the style used in Index Medicus. Consult the list of Journals Indexed for MEDLINE, published annually as a separate publication by the National Library of Medicine.

9. Tables

Tables capture information concisely, and display it efficiently; they also provide information at any desired level of detail and precision. Including data in tables rather than text frequently makes it possible to reduce the length of the text.

Type or print each table with double spacing on a separate sheet of paper. Number tables consecutively in the order of their first citation in the text and supply a brief title for each. Do not use internal horizontal or vertical lines. Give each column a short or abbreviated heading. Authors should place explanatory matter in footnotes, not in the heading. Be sure that each table is cited in the text.

10. Illustrations (Figures)

Figures should be either professionally drawn and photo-graphed, or submitted as photographic quality digital prints. In addition to requiring a version of the figures suitable for printing, Pakistan Journal of Plastic Surgery ask authors for electronic files of figures in a format (e.g., JPEG or GIF) that will produce high quality images in the web version of the journal; authors should review the images.

For x-ray films, scans, and other diagnostic images, as well as pictures of pathology specimens or photomicrographs, send sharp, glossy, black-and-white or color photo-graphic prints, usually 127 x 173 mm (5 x 7 inches). Letters, numbers, and symbols on Figures should therefore be clear and even throughout, and of sufficient size that when reduced for publication each item will still be legible. Figures should be made as self-explanatory as possible, since many will be used directly in slide presentations. Titles and de-tailed explanations belong in the legends, however, not on the illustrations themselves.

Photomicrographs should have internal scale markers. Symbols, arrows, or letters used in photomicrographs should contrast with the background.

If photographs of people are used, either the subjects must not be identifiable or their pictures must be accompanied by written permission to use the photograph. When-ever possible permission for publication should be obtained.

Figures should be numbered consecutively according to the order in which they have been first cited in the text.

11. Legends for Illustrations (Figures)

Type or print out legends for illustrations using double spacing, starting on a separate page, with Arabic numerals cor-responding to the illustrations. When symbols, arrows, numbers, or letters are used to identify parts of the illustrations, identify and explain each one clearly in the legend.

12. Units of Measurement

Measurements of length, height, weight, and volume should be reported in metric units (meter, kilogram, or liter) or their decimal multiples.

Temperatures should be in degrees Celsius. Blood pressures should be in millimeters of mercury, unless other units are specifically required.

13. Abbreviations and Symbols

Use only standard abbreviations; the use of non-standard abbreviations can be extremely confusing to readers. Avoid abbreviations in the title. The full term for which

14. Drug Name

Generic names should be used. When proprietary brands are used in research, include the brand name and the name of the manufacturer in parentheses after first mentioning of the generic name in the Methods section.

15. Guidelines for Authors and Reviewers

All material submitted for publication should be sent exclusively to the Pakistan Journal of Plastic Surgery. Work that has already been reported in a published paper or is described in a paper sent or accepted elsewhere for publication, should not be submitted. Multiple or duplicate submission of the same work to other journal should be avoided as this fall into the category of publication fraud and are liable for disciplinary consequences, including reporting to Pakistan Medical & Dental Council and Higher Education Commission. A complete report following publication of a preliminary report, usually in the form of an abstract, or a paper that has been presented at a scientific meeting, if not published in full in a proceedings or similar publication, may be submitted. Press reports of meetings will not be considered as breach of this rule, but additional data or copies of tables and illustrations should not amplify such reports. In case of doubt, a copy of the published material should be included with a

manuscript for editors' consideration.

Authors can submit their articles by post or by E-mail: pjpspakistan@gmail.com to the Editor, Pakistan Journal of Plastic Surgery. Article can also be submitted by post or by hand on a Compact Disc (CD) with three hard copies. Articles submitted by E-mail are preferred mode of submission and do not require any hard copy.

All authors and co-authors must provide their contact telephone/cell numbers and E-mail addresses only on the title page of manuscript.

A duly filled-in author's certification proforma is mandatory for publication. The duly signed ACP must be returned to the Pakistan Journal of Plastic Surgery office as soon as possible. The sequence / order of the authors on ACP once submitted shall not be changed at any stage.

It is mandatory to provide the institutional ethical review board / committee approval for all research articles, at the time of submission of article.

The editors reserve the right to edit the accepted article to conform to the house-style of the Journal.

16. General archival and linguistic instructions

Authors should submit the manuscript typed in MS Word. Manuscripts should be written in English in British or American style/format (same style should be followed throughout the whole text), in past tense and third person form of address. Sentences should not start with a number or figure. Any illustrations or photographs should also be sent in duplicate. Components of manuscript should be in the following sequence: a title page (containing names of authors, their postal and Email addresses, fax and phone numbers, including mobile phone number of the corresponding author), abstract, key words, text, references, tables (each table, complete with title and footnotes) and legends for llustrations and photographs. Each component should begin on a new page. The manuscript should be typed in double spacing as a single column on A4 (8-1/2" x 11" or 21.5 cm x 28.0 cm), white bond paper with one inch (2.5 cm) margin on one side.

Sub-headings should not be used in any section of the script except in the abstract. In survey and other studies, comments in verbatim should not be stated from a participating group. Acknowledgements are only printed for financing of a study or for acknowledging a previous linked work.

From January 2016, all randomized trials should also provide a proof of being registered at the **International RCT Registry.**

17. Material for Publication

The material submitted for publication may be in the form of an Original research (Randomized controlled trial - RCT, Meta-analysis of RCT, Quasi experimental study, Case Control study, Cohort study, Observational Study with statistical support etc), a Review Article, Commentary, a Case Report, Recent Advances, New techniques, Debates, Adverse Drug Reports, Current Practices, Clinical Practice Article, Short Article, KAP (Knowledge, Attitudes, Practices) study, An Audit Report, Evidence Based Report, Short Communication or a Letter to the Editor. Ideas and Innovations can be reported as changes made by the authors to an existing technique or development of a new technique or instrument. A mere description of a technique without any practical experience or innovation will be considered as an update and not an original article. Any study ending three years prior to date of submission is judged by Editorial Board for its suitability as many changes take place over the period of time, subject to area of the study. Studies more than three years old are not entertained. In exceptional cases, if Editorial Board is of the view that data is important, an extension of one year may be granted. Pakistan Journal of Plastic Surgery also does not accept multiple studies/multiple end publications gathered/derived from a single research project or data (wholly or in part) known as 'salami slices'.

Original articles should normally report original research of relevance to clinical medicine. The original paper should be of about 2000-2500 words excluding abstract and references. It should contain a structured abstract of about 250 words. Three to 10 keywords should be given for an original article as per MeSH (Medical Subject Headings). There should be no more than three tables or illustrations. The data should be supported with 20 to 25 references, which should include local as well as international references. Most of the references should be from last five years from the date of submission.

Clinical Practice Article is a category under which all simple observational case series are entertained. The length of such article should be around 1500 - 1600 words with 15 - 20 references. The rest of the format should be that of an original article. KAP studies, Audit reports, Current Practices, Survey reports and Short Articles are also written on the format of Clinical Practice Article. Evidence based reports must have at least 10 cases and word count of 1000 - 1200 words with 10 - 12 references and not more than

2 tables or illustrations. It should contain a non-structured abstract of about 150 words. Short communications should be of about 1000 - 1200 words, having a non-structured abstract of about 150 words with two tables or illustrations and not more than 10 references. Clinical case reports must be of academic and educational value and provide relevance of the disease being reported as unusual. Brief or negative research findings may appear in this section. The word count of case report should be 800 words with a minimum of 3 key words. It should have a non-structured abstract of about 100 - 150 words (case specific) with maximum of 5 - 6 references. Not more than 2 figures shall be accepted.

Review article should consist of critical overview/analysis of some relatively narrow topic providing background and the recent development with the reference of original literature. It should incorporate author's original work on the same subject. The length of the review article should be of 2500 to 3000 words with minimum of 40 and maximum of 60 references. It should have non-structured abstract of 150 words with minimum 3 key words. An author can write a review article only if he/she has written a minimum of three original research articles and some case reports on the same topic.

Letters should normally not exceed 400 words, with not more than 5 references and be signed by all the authors-maximum 3 are allowed. Preference is given to those that take up points made in contributions published recently in the journal. Letters may be published with a response from the author of the article being discussed. Discussions beyond the initial letter and response will not be entertained for publication. Letters to the editor may be sent for peer review if they report a scientific data. Editorials are written upon invitation.

Between 3 to 10 key words should be given for all the category of manuscripts under the abstracts as per mesh [medical subject heading].

18. Thesis Based Article

Thesis based article should be re-written in accordance with the journal's instructions to the author guidelines.

Article shall undergo routine editorial processing including external review based upon which final decision shall be made for publication. Such articles, if approved, shall be published under the disclosure by author that 'it is a Thesis based article'.

19. Ethical Considerations

If tables, illustrations or photographs, which have already been published, are included, a letter of permission for re-publication should be obtained from author (s) as well as the editor of the journal where it was previously published. Written permission to reproduce photographs of patients, whose identity is not disguised, should be sent with the manuscript; otherwise the eyes will be blackened out. If a medicine is used, generic name should be used. The commercial name may, however, be mentioned only within brackets, only if necessary. In case of medicine or device or any material indicated in text, a declaration by author/s should be submitted that no monetary benefit has been taken from manufacturer/importer of that product by any author. In case of experimental interventions, permission from ethical committee of the hospital should be taken beforehand. Any other conflict of interest must be disclosed. All interventional studies submitted for publication should carry Institutional Ethical & Research Committee approval letter.

Ethical consideration regarding the intervention, added cost of test, and particularly the management of control in case-control comparisons of trials should be addressed: multi-centric authors' affiliation may be asked to be authenticated by provision of permission letters from ethical boards or the heads of involved institutes.

20. Authorship Criteria

As stated in the Uniform Requirements, credit for authorship requires substantial contributions to (a) the conception and design or analysis and interpretation of the data, (b) the drafting of the article or critical revision for important intellectual content, critical appraisal of findings with literature search and actual write up of manuscript, (c) final approval of the version to be published. Each author must sign a statement attesting that he or she fulfills the authorship criteria of the Uniform Requirements.

The Journal discourages submission of more than one article dealing with related aspects of the same study. The journal also discourages the submission of case reports unless unreported from Pakistan. Unusual but already reported cases should, therefore, be submitted as letters to the editor.

21. Copyright

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22. Proofs

Page proofs will be emailed, without the original manuscript, to the corresponding author for proof correction and should be returned to the editor within three days. Major alterations from the text cannot be accepted. Any alterations should be marked, preferable in red.