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PROPORTIONAL EVALUATION ABOUT GRAFT SURVIVAL AMONG FAT HARVESTED MEDIAL THIGH AND ABDOMEN FOR FACIAL CONTOUR MALFORMATION

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Abstract:

Aim: *The objective and aim of this evaluation and study is to evaluate graft survival between fat harvested from abdominal and medial thigh for facial contour distortion.*

Study design: *A Randomized Control Trial.*

Place and duration of the study: *In the Department of Plastic Surgery, Ittefaq Hospital Trust, Lahore for two-year duration from March 2018 to February 2020.*

Methodology: *Average fat survival at the start of the study, in the first and twelfth week. Patients meeting the inclusion criteria were randomly divided into two groups. Fat was harvested from medial thigh in Group A and from abdomen in Group Band the results were compared for fat survival. Fat survival> 6.00 mm over the past 12 weeks was considered excellent. ANOVA and chi-square test were used to compare the average fat thickness (mm) between groups. Complication between group with statistical significance $p < 0.05$.*

Results: *The average final fat thickness in group A was 6030 +0.095 mm and 4.989 ± 1.094 mm in group B ($p = 0.001$). The average age of the respondents was 27 + 7.44 years (range from 12 to 60 years). Thirty patients (76.9%) in group A, none in group B. showed an excellent response ($p = 0.001$).*

Conclusion: *Transplant survival with medial thigh fat better evaluation than results from abdominal fat.*

Key words: *Romberg's disease, fat survival, Fat injection, fat grafting, transplant survival, donor site.*

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INTRODUCTION:

Very traditional Reconstruction options are for renovation skin fat transplant, fat transfer and the use of synthetic materials such as silicone implants; and Hydroxy apatite implants, fat graft as a face filler to correct the face contour. Post-traumatic contour defects, burns, Romberg disease, congenital problems or ablative surgery are the most common causes of facial asymmetry. Many studies have shown high absorption after lipo filling. Peer et al explained survival of transplanted fat cells, volume of transplanted fat cells. With the arrival in 1980, liposuction resulted in the Coleman technique increased fat survival due to gentle extraction, perfect length handling, preparation and transfer date of result. Fat transplant done or another rejuvenating procedures with the advantage of being less invasive procedure with minimal complications. The benefits of antilogous fat transplantation are easy availability, ease of harvesting, minimal risk of infection, and short recovery time. This can be done under Local anesthesia as a daily procedure depending on Injection area. This is the selection procedure Correction of facial contour defects and facial rejuvenation with lasting results Fat can be collected from the thighs, abdomen, lower back, Hip, sacrum and knees that can affect the transplant. However, most of these reports are unconfirmed entries and donor site selection and quality of fat transplantation collections attributed to increased survival implanted fat cells. Another system review by Yu et al. survival rate for auto logous and related fat transplantation with serious complications, survival rates 34.82% in breasts and 30-83% in the facial area. The authors suggested that a donor selection was assumed. The aim of this study was to compare the survival outcome of fat injection with thigh and abdominal fat using high frequency ultrasonography for evaluation of outcome.

METHODOLOGY:

In the Department of Plastic Surgery, Ittefaq Hospital Trust, Lahore for two-year duration from March 2018 to February 2020. Calculated sample size using win-pepiver: 11.15 at 5% significance level and the working power is 80%. After ethical approval Committee for Registration and Hospital Testing, 78 cases of face contour deformation, from 10 to 60 years old, congenital disease / post Romberg / face after injury deformity were selected with purposive sampling. Diabetic patients, Ischemic heart disease and bleeding disorders patients were excluded from the study. The subjects were randomly assigned to two groups (39 in each group). After informed preoperative consent ultrasound was performed for evaluation of thickness of the subcutaneous tissue (fat). Preoperative Front, oblique and standard picture for comparison were taken at 45-degree angle view. The fat was harvested from medial thigh in Group A and from the abdomen in Group B, prepared with the help of gravity and injected with 10 cc syringe (14G needle) in multiple layers under local anesthesia. Then 20-30% over-correction was done because of chance of absorption. The result is classified as excellent (6 mm or more), based on good (5-6 mm) and ordinary (less than 5 mm). Complications like bruising, pain, serous and bleeding were compared in two groups. Data were entered into SPSS version 20.0 and analyzed. The frequencies and percentages for qualitative variable such as gender, transplant survival and gender. Average and standard deviations calculated for numeric variables such as age, thickness initially 1 week and 12 weeks transplant. ANOVA test was carried out to compare average thickness and Ki-square test used to compare results with two Groups with statistically significant $p < 0.05$.

RESULTS:

A total of 78 patients were included in the study. The average age of the subjects was 27 + 7.44 (range 12-60). In group A (medial thigh fat), the average thickness of preoperative fat (Fig. 1a) and in group B (abdominal fat) was 1.612 + 0.06767 mm and 1.605 + 0.0723 mm ($p = 0.650$), as shown in Figure (2a). As shown. The average final fat thickness in Group A was 6.030 +0.095 mm, as shown in Figure (1c) and 4989 +0.094 in Group B.

Figure 1: A 21-year female with Romberg disease having forehead lipoatrophy was treated with fat grafting harvesting from abdomen. (a) pre-op views 1. lateral 2. front 3. lateral. (b) perop view. (c) post-op view: 1. Lateral 2. front 3. lateral.

Figure 2: A 38-year male with Romberg disease having post-traumaticforehead lopoatrophy was treated with fat grafting harvested from thigh (a) pre-op view.1 lateral 2. front. 3 laterals. (b) intra-op view. (c). post-op view after 3 months: 1. lateral 2. front 3. lateral view.

Table 1: Fat survival among groups (n=78).

Fat thickness	Groups	Mean	Std. Deviation	Minimum	Maximum	ANOVA p-value
Fat thickness 12 weeks (final fat thickness)	Group A Group B	6.0308 4.9897	.09502 .09402	5.80 4.80	6.20 5.10	0.001
Fat thickness preoperative (mm)	Group A Group B	1.6128 1.6051	.07671 .07236	1.50 1.50	1.70 1.70	0.650
Fat thickness 1 week	Group A Group B	6.6897 5.7641	.10953 .07066	6.50 5.70	6.80 5.90	0.001

Table 2: Complications among groups.

Complications	Group A (Medial thigh fat) n=39	Group B (Abdomen fat) n=39	Total Complication n=78	Chi-square p-value
Pain	6 (15.4%)	4 (10.3%)	10 (12.8%)	0.498
Bruising	7 (17.9%)	4 (10.3%)	11 (14.1%)	0.329
Bleeding	1 (2.6%)	1 (2.6%)	2 (2.6%)	1.000
Seroma	3 (7.7%)	8 (20.5%)	11 (14.1%)	0.104

mm (p = 0.001, Fig. 2c, Table I). In group A, 76.9% (30) had excellent response and in group 0.0% (0) subjects showed excellent response. Nine patients (23.1%) in Group A, and (n=24) 61.5% in Group B showed good outcome. Fair outcome was observed in 38.5% (n=15) in Group B (p=0.001).In Group A, 17.9% (07) had bruising as compared to 10.3% (04) in group B (p=0.329) and 15.4% (06) in group A had pain as compared to 10.3% (04) in group B (p=0.498). Seroma formation occurred in 7.7% (03) in group A and 20.5% (08) in group B (p=0.104) and only 2.6% (01) subject both in group A and B had bleeding at donor areas (p=1.000, Table II).

DISCUSSION:

This has been shown by research results and the final result depends on the choice of donor area. First choice because of its durable nature, Fat transplantation was considered an ideal filler material for correcting facial asymmetry in both cases of reconstruction and aesthetic purpose. Coleman autologous fat transplants examined and improved Coleman's technique and survival were assessed. Absorption rate is the most important factor in fat transfer. The technique ranges from 20% to 90%. Many techniques have been proposed for the better fat survival technique. Many factors, such as the harvesting method, Processing and transfer of adipose tissue stem cells also play an important role as shown in the final result. Li et al. fat collected from five different donors in common use Places: inner thigh, outer thigh, upper abdomen, lower part stomach and sides as well as the volume, weight and volume analyzed histological markers in studies and not found the difference between weight, volume and histological parameters the amount of fat collected from five different regions. These studies contradict the results of this study. Fat survival is better in patients such as the thighs as was a better donor site and a major positive point here. Analytical analysis with different histological markers, Li et al. Hudson et al. suggested buttock-femoral area was better donor area has been created since the adipose tissue in this area has larger fat cells and greater lipogenic activity Horel works on the stomach, chest or face Liposuction and long-term fat implantation technique volume was assessed by magnetic resonance imaging assessment of volume loss only 5% error, but harder and more expensive than ultrasound. The results were evaluated using similar ultrasound and the results were evaluated based on clinical observation and application high frequency ultrasound with similar results and Kim et al. Small et al. in the clinic injected fat from hips for breast reconstruction and stomach, regardless of injected volume or tissue radiation did not affect fat volume retention. Ibrahim transplant et al. fat transplantation is suggested for reconstructive, regenerative and natural selection for plastic surgery, but long-term studies are needed to assess breast stability after fat collected from the thighs. In this study, volume loss was assessed by ultrasound and compare the two most used sites donor of fat cells, i.e. to verify thighs and abdomen preoperative and postoperative subcutaneous

thickness tissue. The most common complication on the donor's site in group A, 17.9% had bruises. Pain, bleeding can be compared in two groups. The only factor limiting the results of this study is no analytical factors such as histological parameter. This parameter is possible if included in the study, the results would be consistent with literature results.

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