TULIP LIPOSUCTION IN PLASTIC SURGERY

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Tulip liposuction is a recent modification of the classical Mayo liposuction, which is done by suction apparatus consisting of large cannula, non collapsible wide bore tubing and a big suction device. Tulip liposuction is an entirely hand operated device comprising of special syringes, designed to fit snugly to thinner metallic cannula, with proximal ends shaped like a Tulip hence the Tulip liposuction. This modification has many advantages over the Mayo type.

This paper presents the experience 110 cases of liposuction in Bangladesh. The study was carried out at different hospitals in Dhaka from December 1997 to February 2001. One hundred ten patients underwent this procedure. Of them hundred and one were carried out for cosmetic reasons. The other nine for extraction of lipomas. The age range was 21 to 49 years. Twenty four were males and eighty six were females. Sixty seven patients received spinal anesthesia and thirty nine patients received general anaesthesia. Only four cases were done under local anaesthesia. Hyaluronidase, adrenaline and normal saline were injected in the subcutaneous fat. A small stab incision was made and then fat was aspirated. No stitches were required. Complications were minimal and insignificant.

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INTRODUCTION

Illouz first introduced Luposuction in 1977. Classical Mayo liposuction consists of large cannulas (5-8 mm), noncollapsable wide bore tubing and suction tubing apparatus similar to the ones commonly used in an operating theatre. In the mid 1980's Tulip liposuction was introduced. Here an entirely hand operated device is used. It comprises of specially designed syringes, which fit snugly to thinner metallic cannulas. The proximal end of the cannula is shaped like a Tulip. The advantage of this modification is that the instrument is light and not noisy. It is also more precise and less traumatic than the traditional Mayo liposuction. The Tumescent method was started in 1986 in the U.S.A. Rapid modification of technique indicates popularity and demand of liposuctin in plastic surgery. People have become more and more conscious about their looks and are undergoing body contour surgery more frequently. Body contour surgery consists of a variety of procedures – Liposuction, Liposhaving, Abdomioplasty, Flankplasty Liposculpture, etc. At present Lipsuction is the commonest plastic surgical procedure in the west.

Liosuction may be classified into Dry, Wet and Superwet types according to the injected fluid used. It may also be classified into superficial, deep and combined (MALL-Massive All Layer Liposuction) types depending on the tissue plane of operation.

Liposuction is mainly used for cosmetic purpose, improving the shape and appearance of the abdomen, buttocks and thighs (Table I). The arm, face, neck, leg, knees and ankle may also benefited from liposuction. It may also be used in conjunction with other cosmetic procedures such as abdominoplasty, face lift or breast reduction. Liposuction may easily be carried out during other noncosmetic operations e.g., appendectomy, hysterectomy, etc. An important indication of liposuction is lipoma [1]. Subcutaneous lipomas can efficiently be extracted through a small hole by this

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technique. Gynaecomastia is another indication where lipsuction can be very useful[2]. It can also be used to reduce flap bulk, for example after breast reconstruction by TRAM flap [2,3] or for the correction of dog ears, for example after abdominoplsty. The indication of liposuction does not end here. It may effectively be used as a treatment of colostomy or urostomy retraction. Urinary stress incontinence has also been reported to be treated by liposuction [1]. Postmastectomy lympoedema of the arm is another indication. Lastly insulin induced lipohypertrophy can also be treated by liposuction.

Table I. Indications of Tulip Liposuction

SL. No.	Indications	Number of patients (n=110)	Percentage
1.	Cosmetic (Lone use)- Abdomen-Whole, 'Love handles' Circumferential, Part between Scars, Buttock, Thigh, Face, Neck, Leg, Knee, Ankle.	81	73.64%
2.	In conjunction with other cosmetic procedures Abdominoplasty, Facelift, Breast reduction.	4	3.64%
3.	In conjunction with other operations-Appendectomy, Hysterectomy, etc.	6	5.45%
4.	Gynaecomastia	10	9.09%
5.	Lipoma extraction	9	8.18%

MATERIALS & METHODS

The study was carried out at the department of Plastic Surgery, ZH Sikder Women's Medical College, and some private clinics in Dhaka. The period of study was December 1997 to February 2001.

Number of patients was 110. The age range was 21 to 49 years (Table II). Of them Eighty six were females and twenty four were males. One hundred one out of the one hundred ten procedures were carried out for cosmetic reasons and the other nine for extraction of lipomas.

Table II. Age and sex distribution of patients (n=110)

Age group (in years)	Frequency	Male	Female
20-24	24	5	19
25-29	37	10	27
30-34	24	4	20
35-39	16	4	12
40.44	7	1	6
45-49	2	0	2
Total	110	24	86

Liposuction was carried out after careful assessment of each patient. Their desire and expectations were noted. A detailed history including his of her dietary habit was also noted. Lipoma patients underwent detailed local examination, which included location and size of the tumor. Majority of the procedures (sixty seven) was done under spinal anesthesia, whereas thirty nine patients received general anesthesia. Only four cases were done under local anesthesia.

Hyaluronidase, adrenaline and 0.9% sodium chloride solution were injected in the subcutaneous fat a few minutes before carrying out liposuction. Lignocaine was added in the injectate solution for patients who were undergoing the procedure under local anesthesia. Light sedation was also added in these patients. A small stab incision measuring less than 5 mm was made in the flank. Cannual of 4.6-mm size (depending on the location) was then inserted. A specially designed disposable syringe remains attached to the proximal end of the cannula and a constant suction is applied by means of a locking device in the syringe. The partially liquefied fat was then aspirated by repeated to and from movements. During the whole procedure the surgeon's left hand is constantly placed over the moving cannula. This is essential for the assessment of depth of liposuction and prevention of penetration. By changing the direction of the cannula wide area 0 fat could be sucked out by a single hole.

At the end of the procedure the stab incision is closed by steristrips and no stitches were applied. Micropore strappings were used for few days postoperatively. Skin fold thickness was assessed preoperatively and then measured again after the procedure (Figure I). All these measurements were recorded and compared. Pre and postoperative photographs were also taken. Lipid profiles were done preoperatively in patient's under-going massive liposuction. The test was repeated two months after the procedure to detect any change in HDL level.

All the patients treated were followed up and examined regularly.

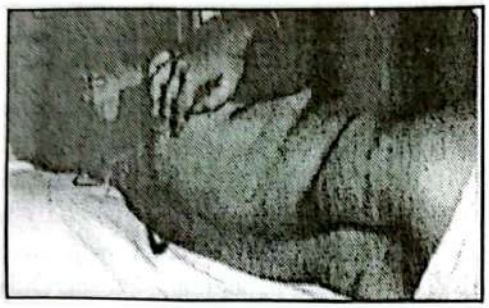

Fig. 1 : Before liposuction – excess abdominal fat with undesirable skin folds in the flank.

RESULTS

The volume of extracted fat ranged from 500 to 3000 ml for patients undergoing liposuction for cosmetic reasons. For lipoma patients the volume ranged from 20 to 150 ml. Skin folds were reduced dramatically (Figure 1 & 2). Most of the patients went home the same day. Overnight hospitalisation was required only in those patients who underwent the procedure in the evening under general anaesthesia. Regular follow up of the patients was done and the skin fold thickness measured. None of the patients in our series were found to regrow fat in the treated areas. This was evidenced by the fact that postoperative skin fold thickness as measured serially in the follow up was constant. Skin flaccidity did not occur in any of the patients. Postperative photographs of patients in standing position and in profile view was taken for comparison with preoperative pictures (Figure 3 and 4). Evaluation of results could thus be made easily by the surgeon and patient.

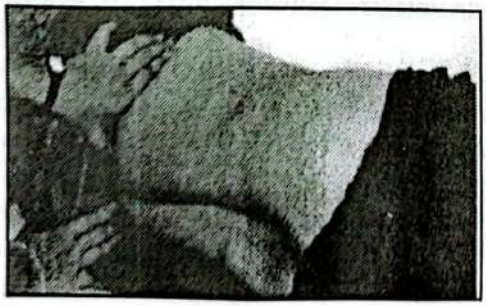

Fig. 2 : Same patient after liposuction – skin folds gone, giving the flanks a pleasing appearance.

For those nine patients undergoing treatment for lipoma, liposuction resulted in total disappearance of the tumour. Repeated follow up did not reveal recurrence in any one of them.

Frank discussion with the patient was done postoperatively to assess overall satisfaction. It was found out that satisfaction is high. Overall complications were minimal (Table III). Bruising was found in nine cases but they revolved spontaneously within a week. Blood loss usually occurs in an average of 9.3 ml per litre of aspirate, which is insignificant. Only one patient had blood loss more than this, but she did not require blood transfusion. One patient developed infection and septicaemia, which needed aggressive antibiotic treatment. Temporary numbness around the umbilicus (due to cutaneous nerve twig injury) occurred in one patient. It was so insignificant that the patient realized about this problem only after interrogation and examination. The periumbilical numbness rapidly and completely recovered as confirmed in subsequent examination of the patient. Other infrequent complications as depicted in Table III were not encountered in our series.

Table III. Complications of Tulip-Liposuction

SL. No..	Complications	Total of patients (n=110)	Percentage
1.	Bruising	9	8.18%
2.	Nerve injury (Temporary)	1	0.91%
3.	Infection	1	0.91%
4.	Blood loss	1	0.91%

DISCUSSION

Liposuction is a new technique in Bangladesh [4]. Our initial experience in this study has been very satisfactory. There is lack of knowledge about his procedure especially regarding its effectiveness and virtual absence of complications.

The false belief that skins sagging may occur after liposuction prompted surgeons to avoid superficial layer liposuction in the past. But it has been shown nowadays that liposuction of the superficial layer of subcutaneous fat does not cause any skin sagging or wrinkling. In fact superficial liposuction first introduced in 1989 resulted in better skin retraction with better cosmetic result. The only danger is damaging the subdermal plexus of vessels. But this can easily can avoided by carefully directing the hole in the tip of cannula away from the skin while at the same time working

very close to it [1]. So, we carried out liposuction of both the deep and superficial layers of fat in our patients, all with good results. Moreover the areas of liposuction do not regrow fat even if one overeats [5, 6]. This is because of the fact that the number of fat cells in the body remains constant through out the whole life. So, when a person gets "fat" there is enlargement of his existing fat cells and not introduction of new ones. So, when fat cells are removed by liposuction they are lost forever. The body does not and cannot replace them. It is wise to avoid overeating after liposuction for the maintenance of good health. But it has been documented that even if patients gain weight postoperatively by overeating, fat recollection does not occur in the treated areas.

The relationship of liposuction with an increase in protective HDL level also drew our attention. We are at present doing prospective study where the HDL levels are being measured in our patients both pre and post operatively. HDL level increases in patient undergoing liposuction [7]. This increase in HDL level is supposed to decrease the risks of cardiovascular and cerebrovascular diseases. It therefore implies that people undergoing liposuction will be at a lower risk of getting ischemic heart disease, myocardial infarction and paralysis from strokes.

The relationship of liposuction and management of diabetes mellitus is also interesting. Glucose tolerance and insulin requirement in diabetes patient has also been shown to improve in some studies [8]. Of course in potential diabetics if liposuction is carried out in a particular time of his/her life the individual may not develop diabetes at all [8].

Aspirated fluid volume in our series ranged from only 20 ml to 3000 ml. It does not cause any significant fluid imbalance. In the U.S.A. liposuction of larger volumes of fat (about 5 litres) are done, frequently and without any complications [8].

Volume of fluid injected preoperatively should be given in a calculated way [9]. The total fluid replacement should be equal to twice the volume of aspirate. That is for a patient, whose aspirate volume is one litre, he or she is supposed to get two litres of fluid replacement in the preoperative period. These two litres of fluid replacement is the sum of the subcutaneous injection plus the intravenous administration. It this total replacement or administration is less than twice the volume of aspirate then additional intravenous fluid is given in the postoperative period.

Apprehension regarding lidocaine toxicity was never there in our series because we did not use it routinely in our patients. Only those patients who underwent lipoma extraction under local anaesthesia received lignocaine. But the amount was entirely within the permissive level. The maximum dose of lignocaine is 300 mg for a 70-kg man or 500 mg in presence of adrenaline (Ref. 10). But in the USA where the Tumescent technique has gained popularity, lignocaine is regularly being used in doses much higher than this. It is argued that since rapid absorption of lignocaine does not occur into the systemic circulation, complication like lignocaine toxicity is not encountered.

Complications were minimal and not significant. Bruising occurred in only nine patients and appeared as areas of discoloration. But they disappeared regularly within a few days. Inspite of routine prophylactic antibiotic one patient developed infection leading to septicaemia and DIC requiring aggressive management. Patients may complain of some numbness in the overlying skin due to injury to cutaneous nerve twigs but they occur rarely and do not bother the patients as it recovers quickly. The relative simplicity of procedure along with virtual absence of complications helped Tulip liposuction gain rapid and widespread popularity amongst plastic surgeons. The permanent nature of treatment as evidenced by absence of recurrence is therefore another interesting fact. None of the patients in our series had recurrence and this finding conforms to other studies done elsewhere [5, 6].

One can get rid of excess fat easily and safely by liposuction. Areas of liposuction do not regrow fat even if one overeats.

So, we conclude that Tulip liposuction is safe, effective and convenient way of reducing fat for cosmetic reasons and also for the treatment of subcutaneous lipoma.

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