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LIPOSUCTION - ASSISTED LIPECTOMY

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ABSTRACT

Background. Lipomas are the most common benign neoplasms originating from adipose tissue, usually subcutaneously located. Patients seek removal, mainly for aesthetic reasons as they often disfigure body contours mutilating natural appearance. Historically, surgical removal comprises the standard of treatment. Liposuction emerges as a new successful treating method in selected cases.

Objective. The primary objective is to evaluate the effectiveness of liposuction in removing lipomas in terms of success rate of total removal, risk of eventual recurrences and patients' satisfaction. Additionally, observation of postoperative events and their resolution is to be done.

Method. This is a retrospective – prospective study comprising 5 cases of liposuction - assisted lipectomies. Thorough analysis of the cases was conducted: preoperative assessment and diagnostics, operative technique and postoperative follow-up. Postoperative period was divided in short term (up to 4 weeks) when early postoperative complications were observed, and long term (up to 12 months) when remnants and eventual recurrences can be seen. Satisfaction was assessed as a questioned inquiry.

Results. Summarizing the results, descriptive statistic was used. In short term follow- up, self-resolving bruising, edema and mild pain were noted. There was no case of infection. In period of up to 12 months follow-up, total lipoma removal and 0% recurrence in all cases was pointed. Satisfaction rate of the patients was high.

Conclusion. Liposuction can be as effective as open surgical removal when treating conventional lipomas. High satisfaction rate, due to small incisional scars, can be achieved.

Key words: lipoma; liposuction; liposuction – assisted lipectomy

INTRODUCTION

Lipomas are the most common benign tumors of mesenchymal origin, with an incidence of 1-2.1 / 1000 [1]. Clinically, they represent mainly as well-defined, mobile, painless and slow-growing soft tissue masses that occur sporadically, but may be associated with hereditary syndromes as well. They can emerge anywhere in the body, but usually under the skin, on the trunk or extremities. [2]

Discussing about lipomas, we refer to the so-called conventional or common lipomas which are composed of pathologically mature adipocytes, without atypia, grouped into lobules by trabecules and fibrous septa. [3.4] In addition to endothelial and immune competent cells, in the fibro-vascular stroma located in the trabecules, there are also CD29 + / CD44 + cells, very similar to fibroblasts. These are stem cells originating from adipose tissue, which are thought to be probable cause of relapse in an incomplete removal of lipomas as they are the main precursors of adipocytes. [5]

Reasons for lipoma removal are an aesthetic nuisance, discomfort, functionally disrupting or cancer phobia. Clinical diagnosis is usually easily set up, but in unclear cases, imaging techniques complemented by thin - needle aspiration / core biopsy can help. Although much less common, it should be mentioned that there are malignant varieties originating from adipose tissue or that secondary malignant alteration is possible. [6.7]

Traditionally, open surgical extirpation is a widely accepted method for the treatment of lipomas. However, in recent decades new treatment modalities appear [8-13]. Liposuction, due to the simplicity and high security, is the most commonly used alternative with rapid growth in utilization. The main advantages of liposuction are effectiveness, small scars and better aesthetic results, shorter operative time, lower risk of hematoma and seroma, and high compliance of patients [8,9]. Despite expanding number of published scientific papers on its success in lipoma treatment, liposuction is still not widely accepted. Main drawbacks are limited visualization during removal, tissue sample fragmentation for histological analysis and possibility of recurrence due to incomplete removal of lipomatous or capsular/hard residual tissue.[14] However, in properly selected cases with good preoperative evaluation, with clear diagnosis and appropriate operative technique used, liposuction - assisted lipectomy may have an advantage over the classical operating technique.

This paper publishes the results of the treatment of lipomas with liposuction in a study of 5 cases. The primary objective is to assess the effectiveness of liposuction in lipoma removal, taking into account the degree of success, the risk of any recurrence and patient satisfaction. In addition, postoperative events will be observed, their progress and the need for any further interventions. Finally, the operative technique will be discussed and its applicability.

MATERIAL AND METHODS

This study included 5 patients with subcutaneous corporal lipomas which have been removed by liposuction. Patients were treated at the University Clinic for Plastic and Reconstructive Surgery in Skopje, where the standard treatment for lipomas is an open surgical extirpation. Patients were offered the new method and after the discussion about the benefits, limitations and risks of both methods, patients have embraced the alternative. The cases were followed prospectively and are still subject of monitoring. Lipomas that are moderately large or large, with a diameter equal to or greater than 5 cm were included. Lipomas smaller than 5cm were not taken under consideration. Ultrasonographic examination and fine-needle aspiration biopsy were made in each case preoperatively. Magnetic Resonance Imaging was used where ultrasonography was not conclusive. Clinical investigation concluded conventional subcutaneous lipomas in all patients.

Operative technique: Surgery is performed in local anesthesia solely or in combination with intravenous sedation. Single shot of broad spectrum antibiotic was given i.v. or i.m. 30-60min. before operation. Marking the outer margins of the skin lipomas follows. After administration of 2 ml local anesthetic (1% lidocaine + 0.01% adrenaline) on the sidelines of a lipoma or about 2 cm laterally (usually where most cosmetically desirable), a sharp 0.5cm incision is made with a scalpel No.15 . Through this port, using a ǿ 1mm/ ǿ 3mm blunt infiltration cannula, the tumor is infiltrated with modified Klein solution (0.1% lidocaine + 1: 1m adrenaline in 1000ml 0.9% NaCl solution) by means of tumescent "superwet" technique of infiltration. The endpoint of infiltration is an orange peel like pale skin. After a period of 15min. while gently massaging, the liposuction is conducted with a blunt Mercedes ǿ 3mm/ǿ 5mm cannula (Byron®) using manually created vacuum with 60ml. Toomey syringe. End point of liposuction is receiving skin smoothing and predomination of a bloody aspirate in the syringe. (Figure 1) The aspirate is decanted and filtered on a gauze. The hard part is sent for pathohistological analysis. Through the same incision, any residues present in the cavity as hard residual tissue are removed with long paean. It is grasped and pull out easily from the internal walls and then sent for pathohistological analysis. The incision is closed with resorptive subcuticular suture followed by a compressive dressing. Patient is discharged home few hours later same day. Check-ups are scheduled on the third and seventh postoperative day and their dynamics depends on further requirements. The patient is given advice to wear a compression garment or bandage for 3 weeks without limiting usual activities. During this period up to one month, we follow early postoperative complications and control the wound / scar. In the late follow-up period of one year, we follow and control the quality of the scar and the liposuctioned surface. At the end of the 12th month or later, overall patient satisfaction of the treatment is questioned. Special attention in this period is paid to the eventual development of recurrence.

Patients' satisfaction rate from operation and final aesthetics was evaluated by using 1 to 5 rating scale questioners.

RESULTS

All cases were operated on between the year of 2013 and of 2015. In all cases, the indications for surgery were solitary, suprafascial lipomatous lesions. Three of them are women and two men, aged 19 to 57 years (average 38 years). All lipomatous changes were at least a diameter greater than or equal to 5 cm (average size 7.6 x 10,4cm). In terms of location, 2 cases were located on the lateral chest wall, one on the upper dorsal region, one in front of the lower-lateral abdominal wall and one on the frontal shoulder. In all cases, the result of the patohistological analysis of the aspirate, with or without the capsule was an ordinary, conventional lipoma.

A common postoperative finding in all was swelling and soft tissue ecchymosis. They resolved spontaneously in the early follow-up period. Pain was moderate. In none of the cases, there was need for aspiration of collected seroma, nor was the case of infection or problematic healing of the wound. Complete removal of lipomas was achieved in all cases. In the late control for at least 12 months or later, there was not even one case with a relapse. There was no case of bad scar or indentation and the unevenness of the liposucted surface. When asked if they were satisfied with the treatment, all patients showed a high degree of satisfaction in terms of operation and in terms of early and late postoperative period. Summarized results are shown in Table 1. Photographed progress of a case shown in Figure 2.

Table 1. Summarized results

Patient/gender		Age	Size(cm)	Location	Relapse	Contentment
М.Љ.	♀	19	5x6	Thorax	-	+++++
J.A.	♀	32	3x6	Thorax	-	+++++
М.М.	♀	42	7x10	Omaris	-	+++++
Г.И.	♂	41	13x20	Abdomen	-	+++++
J.Л.	♂	57	10x10	Dorsi	-	+++++

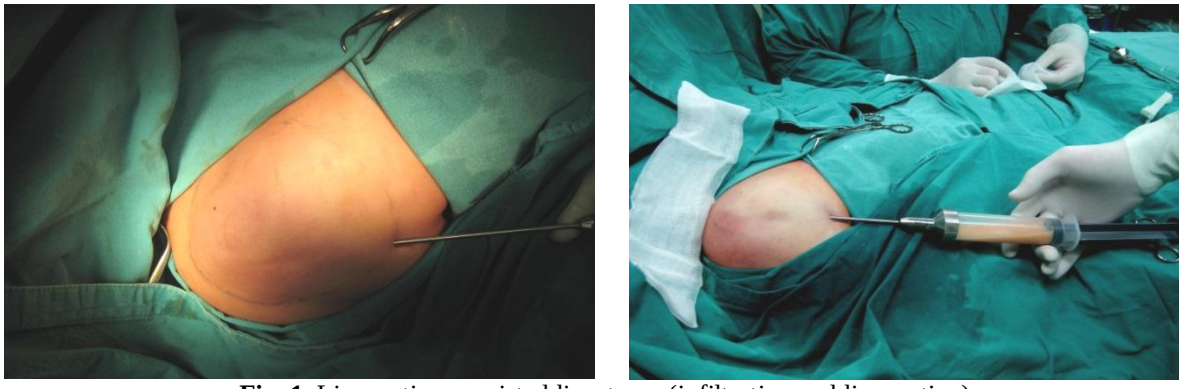

Fig. 1. Liposuction - assisted lipectomy (infiltration and liposuction)

Fig. 2. Preoperative diagnosis, early postoperative period, evaluation of late results.

DISCUSSION

Liposuction technique as a method of evacuation of the adipose tissue was introduced in the mid-70s of the last century with the work of Fischer brothers, primarily for aesthetic purposes. With the introduction of wet technique of Illouz, and then the tumescent technique of Klein, safety in its use significantly improved, which expanded indications for its application. [15]. Its safety standards are well documented. [16,17] In 1985, Rubenstein et all. published the first liposuction - assisted lipectomy [18], which was an introduction to non-aesthetic applications of liposuction [19], and today, lipomas are the most common reason for that. There are numerous case reports and series of patients, both children and adults, which highlight its success in lipoma treatment. [8,9,18,20-30] It is appropriate in removal of moderately large (4-10cm) and large lipomas (over 10 cm), although there are reports of removal of small lipomas (less than 4cm). [21] Our observations suggest that subcutaneous lipomas with diameter more than 5cm can be safely, effectively and completely removed with liposuction. The outcome may vary for lipomas with intramuscular propagation. The main advantages of liposuction stand out: a good aesthetic result, safety, lower risk of seroma, hematoma and complications in general, inconspicuous incisional scar, less pain, a good cost / benefit ratio, the possibility of removing more lipomas with fewer scars, the opportunity to remove lipoma through remote incision acceptable cosmetically etc [19]. The main concern comes from the possibility in overlooking malignancy and a higher risk of recurrence observed in some series. [14]

In order to exclude malignancy, before using this technique, an exact preoperative diagnosis is an imperative, which in most cases clinically is not difficult. Additional information may be obtained by linear ultrasonography and thin - needle aspiration biopsy/nuclear core biopsy. These should be a minimum of preoperative tests, as in our series. One should always take into consideration the atypical lipomas and liposarcoma that can mimic same clinical presentation. Every lipoma with atypical clinical features should be further examined before undergoing liposuction. [6.31] Doubt should arouse abrupt and painful growth of the tumor sizes over 10cm and locations that are uncharacteristic and deeper, especially in patients over 5th decade of life. In that case an MRI in the hands of an experienced radiologist can determine the diagnosis because it is highly sensitive and specific for soft tissue tumors [31,32]. Finally, in such cases, before any decision for surgery it should be preceded by an open biopsy. Although liposarcoma accounts for almost 20% of all soft tissue sarcomas [31], their incidence is very low (2.5 / 10^9 per year), and most of them are well - differentiated. [3,7]. However, the standard of their treatment is an open and radical surgical excision. Error as liposuction of misdiagnosed liposarcoma is an extremely undesirable scenario [33].

Additionally, the hard decanted liposuctional aspirate should be sent to pathohistological verification. Several studies demonstrate the integrity of the cell and stem cells in liposuction aspirate [34, 35], meaning that their reliable microscopic examination is possible. In this regard, the correct preoperative and postoperative diagnosis, the mistakes for misdiagnose are annulated.

The second concern relates to possible higher rate of recidivism, a statement that seems to be extracted prematurely as an observational conclusion from studies with small numbers of patients. The reason stated is the difficulty in removing the fibrous capsule and hard residual tissue with liposuction. [18] The late contains adipose derivate stem precursor cells. [5]. Recurrence risk in open classical lipectomy is about 2%. [31] All studies published in the literature on liposuction - assisted lipectomy are with limited number of participants to identify lower risk of recurrence or about 2%. [30] The only comparative study conducted by Raemdonck et all. which includes 30 cases, shows unacceptably high risk of recurrence in liposuction method compared to an open excision. [14] In a prospective study of Wilhelmi et all., in follow-up period to 10 years, no recurrence was observed in any of all 5 patients. [21]

Liposuction lipectomy in giant lipomas cases report an absence of recurrence in the follow-up period of 2 years. [25.26] In order to reduce the risk of recurrence, Al-Basty et all., recommended after completed wet liposuction, excision of the fibrous capsule with paean (forceps) through the same or through counter-incision for larger lipomas. With this modification, in the follow-up period of 6 years no recurrence was observed in any of the 16 patients. Additionally, the extracted hard tissue can be sent for pathohistological analysis. [23] Choi et all. applied the proposed modification, but by using tumescent infiltration to the lipomas prior to liposuction. In the period of 2 years follow-up, no relapse was noted in 12 patients; still, in the early postoperative period 3 lipomatous remnants were found in dorsally located lipomas. [27] The author believes that due to stiffness/hardness of the dorsally-located lipomas, complete removal was not possible. The difference between these two studies is the infiltration technique, in the second being tumescent. It can have an impact as within this technique endpoint of liposuction is less obvious. Latest and largest study published comprises 44 lipomas in 23 patients where no recurrence is evidenced within a mean follow-up period of 6 years. Author used same modification i.e. combination of liposuction with extirpation of hard residual tissue using wet infiltration technique. [30] It seems that capsulectomy (hard residual tissue removal) should be included as a supplement to liposuction in order to achieve radicalism thus avoiding recurrence. Probably hard residual tissue bears the highest concentration of stem cells and they cannot be always mechanically destroyed only by means of liposuction. This might be an object of further examination. In our series a tumescent infiltration technique is used as it has advantages in terms of reduced bleeding risk. Whether capsule extraction follows, depends on the case. In fact, our objection is that in some cases suction is possible for the capsule as well, particularly in cases with a shorter medical history. Here, it is not very adherent to the surrounding tissue contrary to cases with longer history.

Postoperative period is usually accompanied by swellings, mild pain and moderate eccimosis that are self- retreated. If hematoma and seroma occurs, punctional aspiration is needed and they resolve residue less. Infections are not common. [23,27,30] For these reasons, and due to effectiveness and safety, liposuction - assisted lipectomy is followed by high satisfaction and compliance of the patients. In our series, we found no complications outside the usual and all patients were satisfied with the final result.

CONCLUSION

Despite the rise of liposuction as a minimally invasive method for lipoma removal, with all its advantages, it is still not widely accepted among surgeons. It can be effectively and safely used in the treatment of subcutaneously located, moderately large and large, ordinary lipoma with clear preoperative diagnosis. In such cases, it might be superior alternative to classical open surgery with high satisfaction rate as an outcome. However, for such conclusions to be uniformed, larger randomized studies comparing the separate techniques, are required.

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