Lumbosacral Liposuction. A New Tool for The Treatment of Low Back Pain

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Key words: liposuction, paraspinal muscles, low back pain

Summary

To obtain a better active contention of the lumbosacral spine, a new technique of liposuction of the fat surrounding the atrophied paraspinal muscles is described. A preliminary series of 40 patients presenting low back pain symptoms is presented. The technique, performed on an out patient basis is well tolerated. The MR follow-up controls regularly showed an expansion of the paraspinal muscles. The overall results obtained on this preliminary non uniform series showed encouraging results with 77.5% of very good or good results.

Introduction

The present study proposes a therapeutic approach to low back pain, based upon the observation that atrophy of the paraspinal muscles occurs near the region of an intervertebral lumbar disc hernia, and correlates with fat deposits both between the atrophied muscle bundles and the posterior aspect of the facet joints (figure 1). The study relies upon:

- 1) disc hernia is the consequence of a postural phenomenon causing muscular atrophy, in consequence, bad contention of the lumbosacral spine;
- 2) fat deposits occupy the space left free by the muscular atrophy;
- 3) after medical or percutaneous treatment of the disc hernia, the fat deposits continue to

impede recovery of an active contention of the spine in spite of techniques like physiotherapy and/or muscular stimulation;

4) reduction in the volume of the fat deposits allows an expansion of the atrophied muscles that improves the active contention of the lumbosacral spine and reduces the risk of recurrence of disc injury.

We present a preliminary series of 40 patients with a pathological condition in the lumbosacral region where liposuction¹ was shown to alleviate the pain in a high percentage of them.

Material and Methods

Forty patients were treated including nine men and 31 women. The patients' ages were between 29 and 84 years (mean 58). The symptoms at the time of the treatment were: lumbar pain in 20 cases, lumbar and radicular pain in 14 cases, coxalgia in two cases, and bilateral diffuse pain of the lower extremities in four cases. In all cases the symptoms had persisted for over one year.

In the first group of 28 patients, percutaneous intradiscal treatment had been performed previously (six months to 13 years before liposuction) without meaningful recurrence of disc hernia. In one case a percutaneous intradiscal procedure was simultaneously performed at the same time as the liposuction. In one case a percutaneous intradiscal procedure was performed subsequent to the li-

Figure 1 Right postero-lateral disk herniation. Axial projection. Note the atrophic paraspinal muscles with fat deposits in the posterior compartment, predominant on the right side.

posuction (due to the absence of clinical improvement). In three cases surgical treatment of an intervertebral disc had been previously performed (six months, nine months and three years, respectively) and liposuction was attempted due to the persistence of lumbosacral pain. In eight cases (all women) the patient presented a degenerative anterolysthesis at L4/L5. In one case the patient presented an anterolysthesis L5/S1 with L5 isthmus lysis.

Technique

All cases were treated manually under local anaesthesia on an outpatient basis. The patient is in a prone position. Local anaesthesia is administered with a mixture of 50% xylocaine 1% and 50% sodium bicarbonate. The anesthetized zones include subcutaneous regions on both sides of the midline but also laterally to get a satisfactory anaesthesia of the whole posterior compartment. An injection of a mixture of 1 mg of adrenalin in 1000 cc of saline is done after in the same regions.

Two small paramidline incisions are performed on each side that are usually sufficient to perform the complete procedure. The aspiration is performed with cannulas (figure 2A) (2.5 mm x 10 cm PLA 035 and 2 mm x 10 cm PLA 034, Pouret Medical 21 bis rue Médéric-92110 Clichy- France, www.infopouretmedical.com) and a 10 cc luer lock syringe with blocker (PLA010K). The liposuction is done with slow movements on each side of the mid-

line (figure 2B) and laterally (figure 2C). The material retrieved is systematically analyzed (figure 2D).

At the end of the procedure a compressive bandaging is put in place and is kept for two days. A preventive antibiotherapy is systematically given for three days following the procedure, along with anti-inflammatory and analgesic drugs for one week.

Results

In this preliminary study we chose to evaluate the results with the same simple classification adopted for the percutaneous intradiscal therapeutics. It is certain that more precise classification will be necessary once the indications of this new therapeutic tool are clearly defined.

Very good (VG): absence of all pain, no limitation of activity, return to work.

Good (G): some intermittent pain, minimal limitation of activity, return to work.

Fair (F): improvement but persistence of pain requiring medications, limitation of activity, return to work but limitations with stops.

Bad (B): no improvement or aggravation, medications, limitations of activity, no return to work.

In the group of 28 patients previously treated with a percutaneous intradiscal therapeutic, the results were very good in five cases, good in 17 cases (very good + good 78.5%), fair in five cases, and bad in one case.

The result of the case where a percutaneous intradiscal procedure was performed at the same time as the liposuction was good. In the case where a percutaneous intradiscal procedure was performed after liposuction in a separate procedure remained bad. In the three cases that had disc surgery with an unsatisfactory result, subsequent liposuction was unsatisfactory (fair in two cases and bad in one case). In the eight cases presenting a degenerative anterolysthesis the result was very good in one case, good in six cases, fair in one case. In the case presenting an anterolysthesis with isthmus lysis the result was good. The global result of this series of 40 patients was very good in six cases, good in 25 cases (very good + good 77.5%), fair seven cases, and bad in two cases.

The pathological analysis of the retrieved material only showed fatty tissue without particular characteristics.

Figure 2 A-D) Technique of lumbosacral liposuction. A) Cannula and 10cc syringe with blocker. B) Paramidline liposuction. C) Lateral liposuction (see text). D) Pattern of the retrieved greasy material.

Figure 3 A,B) 56-year-old female. Lumbar pain with right radicular pain for 3 years. Insignificant disk bulgings. Lumbosacral liposuction. Good clinical result. A) Axial sequence. Atrophy of the paraspinal muscles with fat deposits. B) Post liposuction. Obvious expansion of the paraspinal muscles.

Discussion

By assuming a standing position, homo erectus and our more recent ancestors submitted the lumbosacral region to considerable stress. Fundamental balance centers include the L5 isthmus on which rest the inferior processes of L4 facet joints. The muscular environment and particularly the paraspinal muscles maintain the spine harmony limiting more or less efficiently the shearing forces that an erect pos-

ture naturally imposes on the lower intervertebral discs. The force diagram of these postural phenomena is clinically obvious and will be presented later. This preliminary work presents the possibility of obtaining an expansion of the paraspinal lumbar muscles and a consequent improvement of the active contention of the lumbosacral spine by the reduction of the fat deposits accumulated at this level. Liposuction, as described here, has none of its usual aesthetic connotations.

Figure 4 A,B) 58-year-old female. Intradiscal treatment for a L5/S1 disk herniation with good result. Recurrent lumbar pain. Insignificant recurrence of the disk herniation. Atrophy of the paraspinal muscles. Liposuction. Good result. A) Axial sequence before treatment. B) Same sequence after treatment. Obvious expansion of the paraspinal muscles.

Figure 5 A-D) 60-year-old male. Lumbar pain for 2 years. Insignificant disks bulgings. Liposuction. Very good result. A) Sagittal sequence before treatment. B) Same sequence after treatment. Expansion of the paraspinal muscles. C) Coronal sequence before treatment. D) Same sequence after treatment. Expansion of the paraspinal muscles.

Figure 6 A,B) 63-year-old female. Lumbar pain and bilateral radicular pain for 2 years. Insignificant disks bulgings. Good result. Good expansion of the paraspinal muscles at the anterior limits of the posterior compartment. A) Axial sequence before treatment. B) Same sequence after treatment. Good expansion of the paraspinal muscles particularly at the right anterior limit of the posterior compartment (see figure 2 C).

Fat deposits

The accumulation of fat deposits has already been noted by other authors on CT or MRI. So far a clear relation between the importance of the fat deposits and the painful spinal pathology has not been recognized².

They are more frequent in women than in men probably for hormonal reasons and the larger proportion of women in our series is to be noted. The known frequency of the degenerative L4-L5 anterolysthesis in woman matches with this defect of active contention of the lum-

Figure 7 A, B 67-year-old female. Degenerative anterolysthesis L4/L5. Lumbar pain and bilateral radicular pain. Moderate expansion of the paraspinal muscles after treatment. Nevertheless the result was very good (see text). A) Sagittal sequence before treatment. B) Same sequence after treatment. Moderate expansion of the paraspinal muscles.

lumbosacral spine and the importance of the L5 postural balance center. The fat deposits are not however inevitably proportional to the pondered overcharge. The fat deposits are situated in the posterior compartment medial to the paraspinal muscles but also lateral to the muscles between the facet joints and extending up into the anterior limits of the posterior compartment.

Technique

The material of manual liposuction that we used is simple and not expensive. Small cannulas seem adequate for this location. It is very likely that technical improvements will be introduced to make the procedure even more efficient. We still do not know what is the necessary extension of the liposuction gesture: medial to the paraspinal muscles, lateral to the paraspinal muscles up to the anterior limits of the compartment? Is it necessary to reduce the articular fat? Further studies will answer these questions. The preparation of the site of liposuction by a mixture of xylocaine, physiological serum and adrenaline seems beneficial³ and permits this technique to be considered on an outpatient basis, along with the use of small cannulas.

Mechanism of action

Reduction of perimuscular fat deposits by liposuction permits an expansion of the paraspinal muscular volume that can be observed on axial projections (figures 3 and 4) but also documented on other projections (figure 5). Expansion of the muscles up to the anterior limits of the compartment is presumed to be beneficial (figure 6). However pain relief is not always proportional to the degree of muscular expansion (figure 7). Further studies may indicate an area of deposited fat that is particularly important to remove from the posterior compartment.

Indications

In the non uniform group of patients treated in this preliminary study the large proportion of women (77.5%) is explained by the larger fat deposits visualized in women using MRI procedures. As already mentioned other pathogenic considerations might increase the masculine population included.

The technique of liposuction should be considered one of the possible tools in alleviating

lumbosacral pain. The benefits of associating other techniques is still unclear: percutaneous intradiscal therapy was performed simultaneously in one case of disc hernia with a good result. Conversely the percutaneous treatment of a moderate disc bulging after failure of the liposuction in one case did not improve the patient's symptoms. The good results obtained (eight cases out of nine) among the patients presenting a degenerative anterolysthesis (eight cases) or by isthmic lysis (one case) confirmed the action of the liposuction on the active contention of the lumbosacral spine. Techniques of muscular stimulation will be presented later but appear to complement the concept of paraspinal muscular harmony.

It is, to the best of our knowledge, the first time that liposuction is used to encourage muscular expansion. Other indications can be considered in orthopedic or neurological pathologies and they will also be presented later

Conclusions

This technique of lumbo-sacral liposuction has demonstrated safety and therapeutic efficiency. Its indications are not completely determined but it represents a promising therapeutic tool that could be applied to many types of spinal pathology, in association with percutaneous intradiscal therapies, muscular stimulation or physiotherapy.

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EDITORIAL COMMENT

This article is intriguing but difficult to assess. The theory that fat deposits “impede” muscle function is highly original. In point of fact fat deposits have always been deemed to “substitute” atrophying muscle tissue. It is not unlikely that the hypothesis underlying Jacques Théron’s work is well-founded as would appear from the results. However, we are still a long way from a demonstration of scientific evidence.

Jacques Théron’s ideas always reflect an extraordinary ability to see problems from a different point of view (a major asset); this viewpoint may give rise to original solutions, but not always and not necessarily. More evidence and confirmation of these findings are required before this hypothesis can be established.

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