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Miniabdominoplasty for the treatment of aesthetic defects after Pfannenstiel incisions

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Abstract
We describe the miniabdominoplasty technique adopted in patients with unfavourable aesthetic defects after Pfannenstiel incisions and give our results from 32 patients. Eligibility criteria were cutaneous ptosis after Pfannenstiel incisions, and skin elastic enough to do the miniabdominoplasty. Exclusion criteria were obese or previously fat subjects in whom the operation was not possible. The technique is based on the combination of a miniabdominoplasty done obliquely up to the fascia, and liposuction. We operated on 32 patients from September 2005 to May 2006. We saw no postoperative bleeding, haematoma, or seroma. Thirty-one patients had a good final result. In one case postoperative asymmetry required secondary remodelling, which was done under local anaesthesia as an outpatient. After six months follow-up we recorded no asymmetry or change in body shape. We use the miniabdominoplasty technique for the correction of cosmetic abnormalities after Pfannenstiel incisions. It is feasible and safe, with a short operating time, and gives good aesthetic results and few postoperative complications. Further studies, with more patients, are now required to validate these results.

Key Words: Abdominoplasty, aesthetic surgery, Pfannenstiel incision

Introduction

The Pfannenstiel incision was developed by the German gynaecologist Hermann Johannes Pfannenstiel in 1898 with the intention of maintaining the strength of the lower abdominal wall after gynaecological operations. The incision, described in 1900, offered an important alternative to colpotomy and allowed better access and visualisation of the pelvic organs [1,2]. For all these reasons it is still widely used, not only in gynaecology but also in urology and general surgery [3–8].

Women who gain weight after a Pfannenstiel incision usually develop a “ledge” over the transverse line of section, largely as a result of fat deposits that lie over the fibrotic reaction to the scar. Abdominoplasty, known more commonly as a “tummy tuck,” is a major operation used to remove excess skin and fat from the abdomen, but it is not completely free of complications. For these reasons, the procedure is ideal for candidates who are bothered by large fat deposits or loose abdominal skin [9]. However, those with small deposits, such as those who present after Pfannenstiel incisions, are unsuitable, so to solve this problem in 2005 we developed a technique of miniabdominoplasty that is specific for defects after Pfannenstiel incisions. Here we describe the technique and the results obtained with the first 32 patients.

Patients and methods

We obtained informed consent signed after the experimental nature of the operation had been explained. Eligibility criteria included patients with cutaneous ptosis after a Pfannenstiel incision and whose skin was elastic enough for the miniabdominoplasty to be done. Patients were excluded if the skin was not elastic enough, if they were obese or if they had been obese and a final approach would require more interventions before it could be stabilised.
Preoperative

One dose of ceftriaxone (1 g intravenously) or cefuroxime (750 mg) was given for prophylaxis of infection within 30 minutes of incision. Oral anticoagulants if any were discontinued seven days before the operation. Clexane (2000 U subcutaneously) was used as prophylaxis against deep venous thrombosis on the day of operation and the first postoperative day, which is our routine clinical practice.

Technique

The operation is done under general anaesthesia. The incision is made with a number 10 blade near the piliferous zone, 2–3 cm above the pubis. It is then directed longitudinally for 6–8 cm and then superiorly toward the anterior iliac spine (Figure 1a). The skin and the subcutaneous incision are then dissected up to Scarpa’s fascia in an oblique pattern (Figure 1b), to leave more tissue to reconnect the distal flap and achieve a flat surface. The lower border of the incision is also released from its fibrous attachments. After careful haemostasis and closure of the big superficial vessels, the abdominal fascia is reached (superficial layers of the rectus abdominis and obliques muscles; Figure 1c) and dissection of the flap is continued superiorly until the umbilicus is reached. The umbilical stalk is separated from the flap with the skin portion left in place. At this point the operative table is set at 30° in a Trendelenburg position and the excess of flap is resected (Figure 2a, b).

Liposuction of flanks and of the superior abdominal wall was begun, tissue being infiltrating with a Klein solution and fat removed for 20 minutes. The muscular plain is reinforced with a suture that runs from the umbilicus to the pubis, where the skin flap is laid. Finally, the umbilicus is repositioned and any

Figure 1. (a) Suprapubic skin incision. (b) Oblique dissection up to Scarpa’s fascia. (c) Dissection taken down to the abdominal muscles.
abnormalities or umbilical aberrations caused by pregnancy, hernia, scars, are corrected simultaneously. Two 10-mm drains are left in place for the first two to three postoperative days (depending on the quantity of liquid collected). All incisions are closed with interrupted 3/0 poliglecaprone (Monocryl, Ethicon) for Scarpa’s fascia and subcutaneous tissue and continuous 4/0 poliglecaprone subcuticularly for the skin (Figure 2c). A compression bandage is applied for 20–30 days.

**Postoperative care**

Ketorolac was given for pain relief as required by the patient. Although the patient could return to normal activities in about three days, physical exercise should be avoided for the first two months. Follow-up consisted of outpatients visits 3, 6, and 10 days, 2, 4 weeks, and 2 months after the operation. Continuous subcuticular sutures were removed after 10 days.

Primary endpoints in this study included final shape (evaluated by the patient’s judgement and two plastic surgeons who were independent to the study). Secondary endpoints were operating time and the presence of postoperative infections, seromas, or haematomas.

**Results**

We operated on 32 patients from September 2005 to May 2006. Mean age was 38 years (range 25–64). Mean operating time was 174 minutes (range 110–250). Aesthetic results are shown in Figures 3 and 4. In 31 patients good final results were obtained according to both patients and surgeons. One case of postoperative asymmetry required a second remodelling operation and this was done under local anaesthetic in outpatients. We saw no postoperative bleeding, haematomas, or seromas. After six months follow-up we noted no asymmetry or change in body shape.

**Discussion**

The classic abdominoplasty had the goal of flattening the abdominal surface, correcting evident excessive cutaneous fat, enforcing relaxed abdominal muscles, and rebuilding the umbilicus to its original shape. In recent years, liposuction was added and the operation was called abdominolipoplasty or “marriage” abdominoplasty, being aimed at more precise sculpturing of the abdomen [10,11]. More recently, the miniabdominoplasty technique was introduced and readily became available to plastic surgeons [12]. This technique rarely exceeds 10% of all operations on abdominal contours [13], but has a specific indication for women with limited deformity of the lower abdominal musculofascial compartment and with regional fat deposition, to correct the defect when suction alone is insufficient and complete abdominoplasty too much [12,13]. Different techniques have been presented such as the tumescent...
variation [14] or the “marriage” miniabdominoplasty [11,15]. However, to our knowledge, no study has specifically investigated possible specific uses of miniabdominoplasty for patients with defects after Pfannenstiel incisions.

After Pfannenstiel incisions, we have frequently noticed evident cutaneous ptosis in the hypogastric region with flaccid and overabundant tissues. In some cases, the skin is folded up on the upper pubic region assuming the characteristic shape of an apron. We used our modified miniabdominoplasty technique in such cases because we thought that it was possible to obtain reduced scars without the umbilical repositioning, limiting the cutaneous detachment, and eventually also doing a liposuction in the upper part of the abdomen. In our experience, our technique achieved good aesthetic results and reduced the formation of postoperative ecchymoses or seromas when compared to published results (5% incidence of seromas) [9]. In our patients, classic

Figure 3. A 53-year-old woman who underwent hysterectomy six years earlier for a uterine prolapse. Preoperative (superior row) and postoperative results (inferior row) after three months.

Figure 4. A 45-year-old woman who underwent a cesarian delivery 18 years earlier. Preoperative (superior row) and postoperative results (inferior row) after six months.
abdominoplasty would have been disproportionate to the original cutaneous and fatty excess and the simple liposuction would not have produced satisfactory results. Miniabdominoplasty, however, had several advantages: the high-quality, relatively short scar, a better profile to the pubis, a reduced operating time and, in the end, a more comfortable and shorter convalescence for the patient. However, the most important difference lies in the peculiar oblique incision that allowed the superior and inferior borders to match perfectly after the resection, thereby obtaining better flattening of the abdomen and of the scar.

References