Endoscopic Harvesting of Autogenous Fascia Lata


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Purpose: To describe a technique of endoscopic harvesting of autogenous fascia lata.

Methods: A retrospective, noncomparative clinical study to evaluate the technique of videendoscope assistance in harvesting autogenous fascia lata was conducted during a 1-year period in 2002. A small incision approximately 2 cm long is made over the lateral aspect of the thigh, either as a low or high approach. A sheathed 4-mm rigid 0- or 30-degree endoscope is used to visualize the length of the fascia lata along both its superficial aspect and its undersurface. Standard endoscopic brow lifting instruments are then used to dissect a length of fascia under direct visualization.

Results: Three patients underwent harvesting of autogenous fascia lata under endoscopic visualization (2 high-thigh and 1 low-thigh technique). Adequate lengths of fascia lata, approximately 12 cm long, were harvested and no complications occurred. The endoscope was particularly useful in identifying the anatomical structures adjacent to the fascia. The technique was easy to use, but took twice as long as traditional harvesting techniques.

Conclusions: Videendoscopy allows complete visualization of anatomical structures during harvesting of autogenous fascia lata. It highlights the anatomy for teaching and provides an alternative approach to conventional harvesting methods.

Autogenous fascia lata (AFL) is commonly used by ophthalmic plastic surgeons for procedures such as frontalis suspension ptosis surgery and lower eyelid slings in facial palsy. Traditional techniques for harvesting AFL use direct exposure with long incisions, or a fasciotome passed “blindly” in the lateral aspect of the upper leg through a short skin incision.

The development of videendoscopic techniques in ophthalmic plastic surgery allows a direct view, at high magnification and with good illumination, enabling minimally invasive subcutaneous surgery. In addition to its use during brow-lift surgery, the videendoscope is useful in the removal of periorbital lesions,1 potentially useful in orbital surgery,2 and is a valuable adjunct in allowing complete visualization while supervising trainees during subperiosteal orbital surgery.3 Its use already is established in lacrimal and orbital decompression surgery.4–8

The use of the videendoscope in assisting with AFL harvesting was first reported by Tucker et al.9 in 1997 for obtaining a large sheet of AFL for inguinal hernia repair. We describe 2 endoscopic approaches for assisting in the harvesting of AFL strips that allow good visualization throughout the procedure. The traditional fasciotome is not used in either of these approaches.

METHODS

A retrospective, noncomparative clinical study to evaluate the technique of videendoscope assistance in harvesting AFL was conducted during a 1-year period in 2002. A sheathed, 4-mm, rigid 0- or 30-degree endoscope is used to visualize the fascia, along both its superficial aspect and undersurface through a small incision less than 2 cm long, made over the lateral aspect of the thigh (either a high10 or low11 approach). Standard endoscopic brow lifting instruments are used to dissect a 12-cm length of fascia lata (FL) under endoscopic visualization. Neither ethics committee nor institutional review board approval was required for this study.

High Thigh Approach:10 The skin incision is made in a Langer line that bisects a line between the anterior iliac crest and the greater trochanter. Further dissection through fat and the cobweblike homologue of Scarpa fascia exposes the underlying FL. Fascia is exposed in all directions, and inferior blunt dissection under endoscopic visualization—using a periosteal elevator and endoscopic Metzenbaum scissors (EMS) to divide cross-fibers—is continued to 10 cm to 12 cm below the incision. Superior, anterior, and posterior FL cuts are made under
direct exposure to define the strip width, followed by separation of the deep surface of the FL from the underlying musculature using an elevator under endoscopic visualization. While an assistant maintains gentle traction on the FL strip, the anterior and posterior FL strip incisions are then continued inferiely under endoscopic visualization using EMS, taking care not to traumatize the underlying musculature. An inferior FL cut is made before finally excising a 10- to 12-cm strip. The deep tissue is closed in 2 layers with 4/0 absorbable sutures before the skin is sutured with 4/0 Prolene.

**Low Thigh Approach:** A short skin incision is made 10 cm to 14 cm above the knee joint (adult measurements), along a line from the head of the fibula to the anterior iliac crest. With the knee in the flexed position, further dissection through fat exposes the iliotibial tract at the lateral part of the FL. The subcutaneous tissue is undermined using periosteal elevators for blunt dissection under endoscopic visualization, and the cross-fibers found high on the anterior surface of the FL are divided to expose the vertical fibers visible on the anterior FL surface (Fig. 1). The anterior plane (subcutaneous) and, following incision of the FL, the posterior plane (subfascial, Fig. 2) are gently opened to a point 12 cm above the incision using blunt dissection under endoscopic visualization (Fig. 3). Long, vertical cuts are made with the EMS (width of strip, approximately 12 mm) (Fig. 4A, B). Tapered superior FL cuts are made to complete the FL strip (Fig. 4C, D) and the endoscopic graspers are used to pull down the distal end of the strip out of the wound (Fig. 5). The deep tissue is closed with 4/0 absorbable suture and the skin with 4/0 Prolene.

**RESULTS**

Three patients underwent harvesting of AFL under endoscopic visualization. Two patients underwent a high-thigh approach and 1 patient underwent a low-thigh approach. AFL was harvested for brow suspension ptosis surgery in 2 patients (1 female age 16 years and 1 male age 63 years) and for a lower eyelid fascial sling in 1 patient (a 56-year-old man). All surgery
was performed under general anesthesia. In all cases, 10 cm to 12 cm of FL was harvested. No hematoma or other complications occurred. The endoscope was of particular use in identifying and therefore avoiding anatomic structures related to the FL; e.g., fine blood vessels.

Although the technique was relatively straightforward, these initial cases took twice as long as conventional harvesting techniques with a fasciotome.

No complications or unexpected additional surgical trauma resulted from the use of the endoscope or endoscopic brow instruments during the surgical procedure. No herniation of the muscle belly following the low approach was noted postoperatively.

DISCUSSION

The video-endoscope is emerging as a useful adjunct to facial plastic surgery\textsuperscript{1–5} and is widely used by oculoplastic surgeons for brow and forehead lifting and endoscopic lacrimal surgery. Videoendoscopy has the advantage of providing a high level of local illumination and high magnification for the operating surgeon and for observers. Furthermore, it affords the opportunity to record surgery on video and later view the procedure, particularly for the purposes of teaching.

The use of the videoendoscope in assisting with FL harvesting was first reported by Tucker et al.\textsuperscript{9} for a large sheet of FL for inguinal hernia repair. It provides complete visualization of the anatomic structures during harvesting of AFL. We evaluated our endoscopic AFL

![Image](374 R. MALHOTRA ET AL.)

FIG. 3. Step 3: Measure the length. Rigid endoscope two thirds of the way along the required length of fascia lata, indicated by a cutaneous line marked above the incision.

FIG. 4. Step 4: Cut the fascia. Use endoscopic Metzenbaum scissors to cut the fascia lata along its vertical length under endoscopic visualization. \textbf{A} and \textbf{B}, Longitudinal cuts. \textbf{C} and \textbf{D}, Cut the distal end with endoscopic Metzenbaum scissors, tapering the strip to an apex.
harvesting technique in the harvesting of a linear strip using both the high and low approach. Each approach was equally efficacious and the choice reflected the usual AFL harvest site of the individual surgeon. Although the preliminary cases were performed under general anesthesia, this technique could easily be done under tumescent local anesthesia. No irrigation or insufflation was required and direct endoscopic visualization facilitated the technique. These 3 preliminary cases each took longer than when using traditional techniques because the technique was being developed. Other disadvantages of endo-AFL harvesting are the cost of the equipment and the need for the surgeon to be skilled with the endoscope. These are not seen as major hurdles, because many oculoplastic surgeons already own and use endoscopic equipment.

Endoscopic harvesting of AFL offers the benefit over conventional techniques of highlighting the anatomy for teaching and it provides an alternative approach to conventional harvesting. This may be of benefit in the rare instance where conventional techniques, for example using a fasciotome, fail to harvest sufficient material, a complication encountered by 2 of the authors.

REFERENCES