Lower Eyelid Hernia Repair for Palpebral Bags: A Comparative Study

Fereydoun Don Parsa, M.D., Michael J. Miyashiro, M.D., Ebrahim Elahi, M.D., and Todd M. Mirzai, M.D.

Honolulu, Hawaii, Houston, Texas, and New York, N.Y.

The standard treatment for herniated "bags" of the lower eyelid is surgical removal of excess fat. Sachs and Bosniak in 1986 and de la Plaza and Arroyo in 1988 described a new technique for treatment of palpebral bags that consisted of returning the herniated fat to the orbital cavity and retaining it by continuous sutures of the capsulopalpebral fascia either to the dehiscent portion of the orbital septum or to the periosteum of the lower orbital rim. This article reports a prospective study of 26 patients who underwent standard blepharoplasty in one lower eyelid and capsulopalpebral fascia hernia repair in the other lower eyelid. All were evaluated at 6 weeks and at 6 months after surgery, and the outcomes were compared. The results of the two different techniques in the same patient have shown comparable aesthetic outcomes in the treatment of palpebral bags. However, results indicate that the capsulopalpebral fascia hernia repair technique carries less discomfort and pain during the operation and may be less prone to postoperative bleeding and hematoma formation. In addition, in contrast to standard lower blepharoplasty with fat resection, bullapping of the lower lid or potential sunken appearance of the globe may remain absent with capsulopalpebral fascia hernia repair beyond the 6-month period of this study. (Plast. Reconstr. Surg. 102: 2459, 1998.)

In 1986, Sachs and Bosniak presented 35 patients with periorbital fat herniation who underwent direct suture repair of dehiscent orbital septum to the capsulopalpebral fascia. They reported no recurrence or reprolapse of periorbital fat.1 In 1988, de la Plaza and Arroyo published a series of 32 patients who underwent lower blepharoplasty for palpebral bags by placing the adipose tissue back in the orbital cavity and retaining it by approximating the capsulopalpebral fascia to the periosteum of the orbital rim with continuous sutures. They reported excellent results with no complica-

tions or recurrences in any of their 32 patients.2

Macroscopically, the capsulopalpebral fascia has been described as a very flexible and slack structure, unlike other fascia.3 It arises from the inferior rectus muscle, dividing into two portions that go around the inferior oblique muscle before inserting into the tarsus.3-5 Beneath the inferior rectus muscle, the capsulopalpebral fascia is a thin structure not containing smooth muscle fibers, whereas above it, the fascial layer is larger and contains smooth muscle fibers. The orbital fat is bordered anteriorly by the septum orbitale and posteriorly and superiorly by the capsulopalpebral fascia. Approximately 5 mm beneath the inferior tarsal border, the septum and capsulopalpebral fascia fuse together5 (Fig. 1).

MATERIALS AND METHODS

From 1991 to 1998, 26 patients with palpebral bags consented to undergo capsulopalpebral fascia hernia repair without fat resection on one side and standard repair with fat removal on the other side. In each subsequent patient, the type of repair was alternated from one side to the other. In all consenting patients, both lower eyelids were comparable in their degrees of fatty protrusion. No patient gave a history of previous injury or blepharoplasty. All patients were operated on by the same senior surgeon (F.D.P.), and all patients were seen postoperatively by him at regular intervals and photographed at 6 weeks and at 6 months after surgery. Final evaluation of the results was made at 6 months after surgery with

From the University of Hawaii at Manoa, John A. Burns School of Medicine, Department of Surgery; the University of Texas Medical School at Houston, Department of Ophthalmology and Visual Sciences; and Mount Sinai School of Medicine, Department of Ophthalmology. Received for publication April 15, 1998; revised June 23, 1998.

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the surgeon unaware of the type of repair because the type of repair was alternated from one side to the other in consecutive patients. In particular, the lower lid position, eyelid mobility, and any hollowing of the lower eyelid were documented. These findings were then matched with the documented types of repair.

Operative Technique

Lower eyelids are marked preoperatively with the patient in a sitting position. The amount of skin and fat in excess is noted. The operation proceeds under light intravenous sedation with meperidine and midazolam. Local anesthesia is obtained with the injection of 2% xylocaine with 1:100,000 epinephrine. Subciliary incisions are made, and skin flaps are raised. The orbicularis oculi muscle is split within the lower aspect of its septal portion, exposing the retromuscular space. Capsulopalpebral fascia and the inferior orbital rim are exposed by incising the septum orbitale. The inferior portion of the capsulopalpebral fascia is sutured to the perioisteum of the orbital rim with interrupted 5-0 absorbable monofilament sutures (5-0 polyglyconate or Maxon). An average of five to seven such sutures are placed. Hemostasis is obtained with fine jeweler’s forceps. Any excess skin is then trimmed, and the incision is closed with interrupted 6-0 polypropylene or nylon sutures. On the contralateral lower eyelid a standard blepharoplasty is performed with similar exposure and with excision of excess fat.

RESULTS

Of the 26 patients, 22 were women and 4 were men. Figures 2 through 9 show the preoperative photographs on the left and postoperative views on the right. Patients’ ages ranged from 24 to 76 years with an average age of 42 years. Twenty-one patients were Asian of Chinese or Japanese ancestry, and the remaining five patients were Caucasian or of mixed ethnicity. All patients were seen at 6 weeks and 6 months after surgery. Both procedures were of comparable duration.

During the capsulopalpebral fascia hernia repair procedure, patients invariably had none to very minimal discomfort and there was no need to anesthetize the fat. This finding contrasted with that during the standard fat resection procedure on the other lower eyelid, i.e., in all instances, additional local anesthetic solution was injected into the fatty compartments. Also, typically, the majority of patients required additional intravenous sedation during fat resection in contrast to the side undergoing capsulopalpebral fascia hernia repair.

Postoperative discomfort and pain were similar on both sides. Ecchymosis and edema were comparable on both sides.
Fig. 3. A 34-year-old patient with standard blepharoplasty on the right and capsulopalpebral fascia hernia repair on the left side of the face. (Left) Preoperative. (Right) Six months postoperative.

Fig. 4. A 45-year-old patient with standard blepharoplasty on the right and capsulopalpebral fascia hernia repair on the left side of the face. (Left) Preoperative. (Right) Six months postoperative.

Fig. 5. A 54-year-old patient with standard blepharoplasty on the left and capsulopalpebral fascia hernia repair on the right side of the face. (Left) Preoperative. (Right) Six months postoperative.
Fig. 6. A 55-year-old patient with standard blepharoplasty on the right and capsulopalpebral fascia hernia repair on the left side of the face. (Left) Preoperative. (Right) Six months postoperative.

Fig. 7. A 59-year-old patient with standard blepharoplasty on the left and capsulopalpebral fascia hernia repair on the right side of the face. (Left) Preoperative. (Right) Six months postoperative.

Fig. 8. A 64-year-old patient with standard blepharoplasty on the right and capsulopalpebral fascia hernia repair on the left side of the face. (Left) Preoperative. (Right) Six months postoperative.

One lower eyelid in a 37-year-old American-Chinese woman who had undergone standard blepharoplasty showed minimal to mild over-correction due to excessive fat resection. Another lower eyelid in a 47-year-old Japanese man with standard fat resection developed lid retraction with mild to moderate ectropion in upward gaze. This complication resolved spontaneously within 8 weeks. With the exception of this patient, the position of the lower eyelid
as well as its mobility were normal in all remaining patients at 6 weeks and at 6 months after surgery.

**DISCUSSION**

The identification of capsulopalpebral fascia as a legitimate structure was first described in entropion repair in 1983. Its use for correction of palpebral bags was reported by Sachs and Bosniak in 1986 and by de la Plaza and Arroyo in 1988. In a discussion of the article by de la Plaza and Arroyo, Rees raised concern that suturing the capsulopalpebral fascia to the periosteum of the orbital rim in young adults who have firm tissues may limit upward mobility of the lower eyelids. In 1994, Goldberg et al. demonstrated that the capsulopalpebral fascia is a valid construct that can be outlined clearly by ultrafine surface coil MRI. Microscopically, capsulopalpebral fascia had been described as early as 1982 by Hawes and Dornbach.

The pseudoherniation of palpebral bags has numerous causes such as weakening of the orbital septum, atrophy of the orbicularis muscle, and slackness of the skin. Alone or combined, these factors can result in loss of anterior orbital support. Other causes such as allergy, kidney disease, cirrhosis, heart disease, or thyroid dysfunction, as well as hereditary and constitutional factors may also play a role.

We believe that in a means somewhat similar to the commonly used transversalis fascia in inguinal hernia correction, capsulopalpebral fascia hernia repair of the lower eyelids gives us another option in the treatment of palpebral bags. In contrast to de la Plaza and Arroyo, who used running sutures, we prefer interrupted, absorbable monofilament sutures (5-0 polyglyconate-Maxon). We believe that in this manner, proper tension on the capsulopalpebral fascia can be assessed with the placement of each separate suture. At the completion of the repair, mild pressure is applied on the globe and any site of herniation is sutured. An average of five to seven stitches are placed in between the capsulopalpebral fascia and the periosteum of the orbital rim.

All the procedures were performed by the same senior surgeon (F.D.P.). The patients were under local anesthesia and light intravenous sedation on an outpatient basis. We found that pain and discomfort that is associated with traction and coagulation of the fatty tissue in a standard blepharoplasty is eliminated in the capsulopalpebral fascia hernia repair. Therefore, additional intravenous sedation as well as the added steps of injecting more local anesthetic solution into the orbital fat are avoided. Similarly, the measures required to control bleeding during intraorbital fat resection are eliminated; therefore, any possible postoperative bleeding and hematoma formation from these sites are prevented. Although the source of orbital hemorrhage in blepharoplasty-associated blindness remains controversial, it is noteworthy that blindness has not been reported to occur unless the intraorbital fat has been violated and resected. We can only postulate that because no fat is excised during capsulopalpebral fascia hernia repair, one would not encounter any blepharoplasty-associated blindness from this particular source. However, other sources of postblepharoplasty-associated blindness still exist.
Because fat is returned to its original compartment, it is not available for reconstructing the periorbital regions. In these instances, one must consider other fat-preserving techniques such as those described by Loeb, Hamra, and others. Only one patient showed a mild degree of hollowing after standard fat resection. Because of the relatively small sample size, this finding cannot be adequately subjected to statistical analysis. We do, however, postulate that with fat resection one may observe in our series of standard lower blepharoplasty some degree of hollowing as well as sunken appearance of the globe with a longer follow-up, as has been observed by others. In contrast to the standard fat resection, the capsulopalpebral fascia hernia repair does not require the difficult task of estimating the exact amount of fat to be removed. Not infrequently, too much fat is either resected or coagulated, thus, leading to postoperative hollowing. Obviously, undercorrection by not removing enough fat is another potential problem that can be avoided by capsulopalpebral fascia hernia repair.

One lower eyelid showed lid retraction upon upward gaze after standard fat resection. We believe that this finding may have been caused by scar contracture from coagulation of the fatty tissue and the septum orbitale. This complication corrected itself within 8 weeks after surgery without any treatment.

When we compared the total operative time between the two procedures, we found them comparable. However, the capsulopalpebral fascia hernia repair procedure seemed less "stressful," both for the surgeon and for the lightly sedated patient. We attributed this finding to the elimination of traction and coagulation of the fatty tissue that invariably causes pain and discomfort in the lightly sedated patients.

Among the potential risks with the capsulopalpebral fascia hernia repair is the possibility of limitation of upward gaze, as was suspected by Rees. His concern dealt with the possible lack of elasticity of the capsulopalpebral fascia, particularly in the elderly. We uniformly found the capsulopalpebral fascia to be extremely elastic, stretching to approximately twice its length in all age groups in this series, in which ages varied from 24 to 76 years. However, care must be taken in not placing the sutures too close to the tarsal plate because this placement may result in lid retraction or ecropion. These sutures are best placed approximately 1.2 to 1.5 cm from the lower lid margin when the lower lid border is in a nonstretched position. This distance is about twice as long when the free margin of the lower lid is pulled upward by a traction suture. The patient may also be asked to look upward with each capsulopalpebral fascia suture placement, and the position of the lid margin checked. However, with some experience, this maneuver becomes unnecessary.

Although we encountered no problem with the motility of the inferior rectus and inferior oblique muscles after capsulopalpebral fascia hernia repair, we recommend that only small bites be taken into the capsulopalpebral fascia, thus avoiding this potential complication.

CONCLUSIONS

Lower blepharoplasty for palpebral bags is a challenging procedure in aesthetic surgery. This article compares standard fat excision with capsulopalpebral fascia hernia repair in the same patient for correction of this condition. We found that capsulopalpebral fascia hernia repair offers at least equal or possibly less morbidity compared with the standard orbital fat removal for palpebral bags. It carries less intraoperative discomfort and pain and is less prone to postoperative bleeding and hematoma formation because intraorbital fat is not violated by resection and coagulation. We observed one case of mild hollowing of a lower lid after standard fat resection. Such hollowing of the lower lid as well as sunken eye appearance was not noted in the lower eyelids after capsulopalpebral fascia hernia repair at 6 months and will most likely not become a problem in the future with longer follow-ups. In contrast, postoperative hollowing of the lower eyelids is not an infrequent observation and has been well documented in the literature after standard blepharoplasty with fat resection.

Fereydun Don Parsa, M.D.
Queen's Physician's Office Building II
1329 Lusitana Street
Suite 807
Honolulu, Hawaii 96813

REFERENCES

2. de la Plaza, R., and Arroyo, J. M. A new technique for