

Correction of True Periorbital Fat Herniation in Cosmetic Lower Lid Blepharoplasty

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Abstract. The presence of puffy, baggy lower eyelids is one of the first signs of the aging face. Baggy eyelids can result from excessive eyelid skin, hypertrophied orbicularis muscle, and/or periorbital fat herniation. An exact diagnosis of which components are contributing to the problem must be made in the preoperative period so that proper correction can be made during surgery. The concept of true periorbital fat herniation in the causation of baggy lower eyelids is presented. The surgical correction of this anatomic defect involves identification and approximation of the dehiscient orbital septum to the capsulopalpebral ligament. Thirty-five patients who presented with true lower eyelid fat herniation and who underwent direct suture repair are reviewed.

Key words: Lower lid fat hernia - repair

In a youthful appearance the lower eyelids are noted to have a smooth slightly concave sulcus with no distinct puffiness [2, 6]. The upper eyelids descend smoothly from the supra-orbital rim with a slight convexity to a well-defined supratarsal crease. From this crease the eyelid skin is draped firmly over the tarsus to the ciliary margin.

The integrity of this system is maintained by the firm, nonelastic orbital septum that separates the eyelids from the orbital contents, and which extends along the entire bony circumference of the orbital base up to the tarsal plates and to the ligaments which extend from the tarsal plates. Medially, the septum is attached to the posterior lacrimal crest and, therefore, located posterior to the lacrimal sac and to the fascicles of the medial palpebral ligament. Superiorly, the septum inserts along the entire length of the posterior lip of the superior orbital rim, but encircles two orifices: one for the orbital notch and another for the pulley of the superior oblique tendon. Laterally, the septum follows the lateral orbital wall, passing in front of the tendinous insertion of the lateral palpebral ligament to Whitnall's Tubercle. Inferiorly, after attaching somewhat to the anterior surface of the malar bone, the septum follows the inferior orbital rim and joins the medial insertions. The peripheral orbital fat is enclosed in a sac of thin connective tissue and lies between the ocular muscles and the periosteum of the orbit. In the upper lid, it is contained within the orbit by the orbital septum's attachment to the capsulopalpebral fascia. The line of fusion of the septum orbitale with the levator aponeurosis and capsulopalpebral fascia forms a distinct surgical landmark—a white line. Its position varies but in the upper lid it is about 10-15 mm above the superior tarsal margin; in the lower lid it is about 5 mm interior to the lower tarsal margin. Its thickness varies, being thinner and less distinct

medially. Anterior to the septum is a loose, weak fibrous connective tissue referred to as the sub orbicularis fascia. This loose connective tissue covers the anterior surface of the septum, the white line, the anterior surface of the levator aponeurosis, and capsulopalpebral fascia, and tarsal plates. The true herniation of lower lid fat exists between the capsulopalpebral ligament superiorly and the inferior extent of the orbital septum (Fig. 1) [4, 9].

Technique

The lower eyelid fat and orbital septum are exposed in the following manner. Methylene blue is used to mark a skin crease just lateral to the lateral canthus, 2% Xylocaine with 1 : 100,000 epinephrine is injected into the skin crease then infiltration continues medially in a plane below the orbicularis oculi muscle. A #15 scalpel is used to incise the marked skin crease extending 1 cm lateral to the canthus. The incision is carried down to but not through the periorbital periosteum. A subciliary incision, lateral to medial, is accomplished with a fine curved scissor. The incision extends to 2 mm lateral to the lower puncta. The lower lid skin muscle flap is retracted inferiorly exposing herniated periorbital fat (Fig. 2). Careful dissection antero-inferiorly produces a firm thick dehiscient orbital septum which is tagged with a 4-O silk tie. The herniated periorbital fat is now reduced until digital pressure on the superior globe no longer produces obvious prolapsing of orbital fat. The dehiscient orbital septum is then reapproximated to the capsulopalpebral fascia with 5-O plain sutures (Fig. 3). If excessive skin or hypertrophied orbicularis muscle is present, it is excised at this time. The skin muscle lower lid flap is closed with interrupted 6-O nylon sutures.

Results

From 1980 to 1984 35 patients with true periorbital fat herniation underwent direct suture repair of a dehiscient orbital septum. This study included a total of 285 patients giving a 14% incidence of true herniation. Two hundred fifty patients had routine blepharoplasty, not incorporating the repair technique. The reasons for not performing a hernia repair included (1) no septal dehiscence found at time of surgery, (2) only excessive skin or hypertrophied muscle was encountered, negating the need for orbital fat manipulation.

In comparing techniques, none of the 35 patients who underwent direct suture repair of their dehiscient septums have presented with re prolapse of periorbital fat compared with a 5% recurrence rate (17/250) when the hernia repair

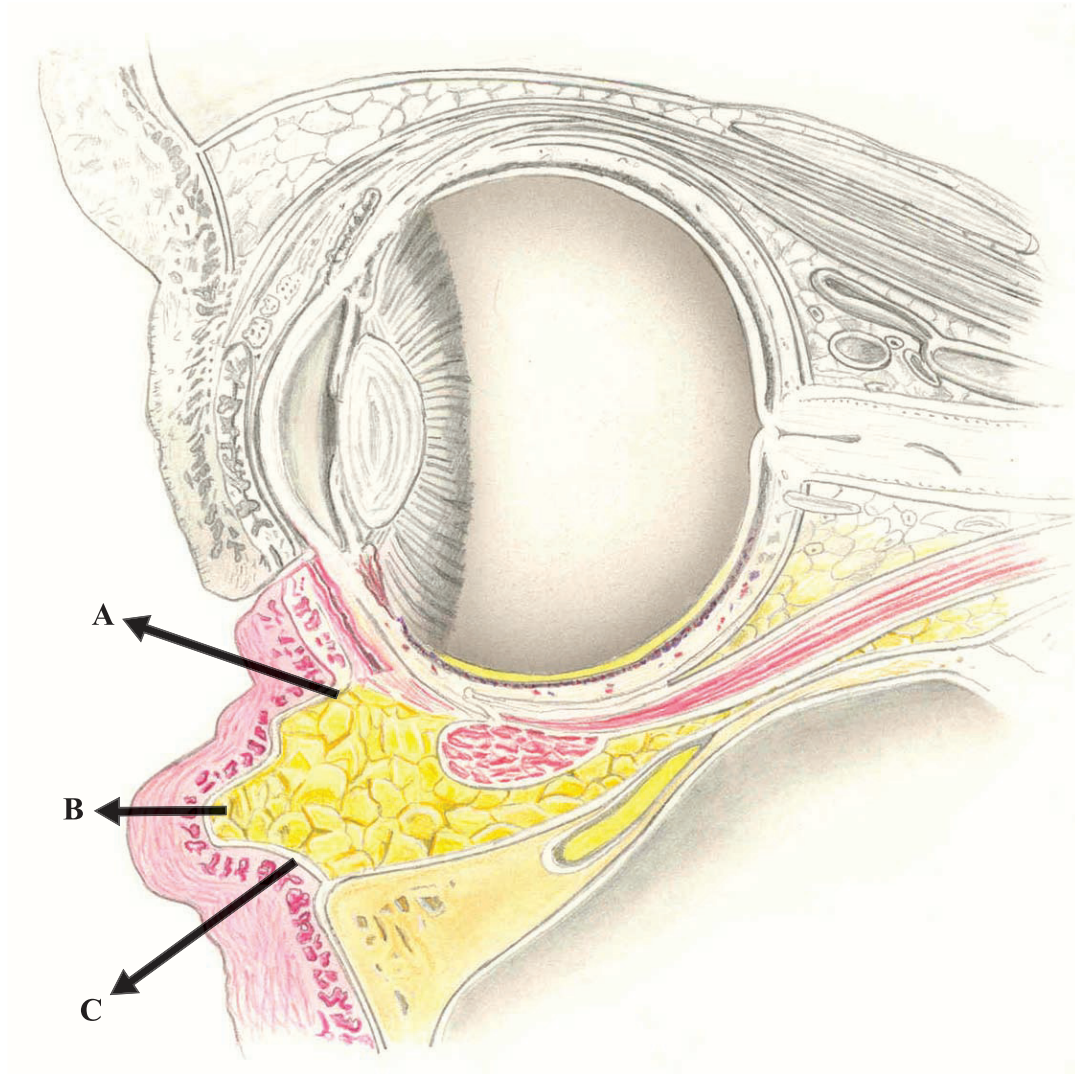


Fig.1. Cross section of anatomy related to true periorbital fat herniation: (A) capsulopalpebral fascia, (B) herniated fat between (A) and (C), (C) inferior extent of orbital septum

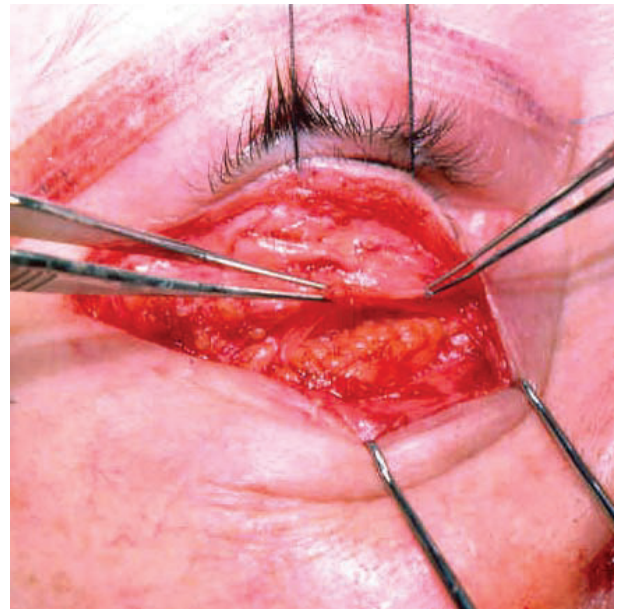
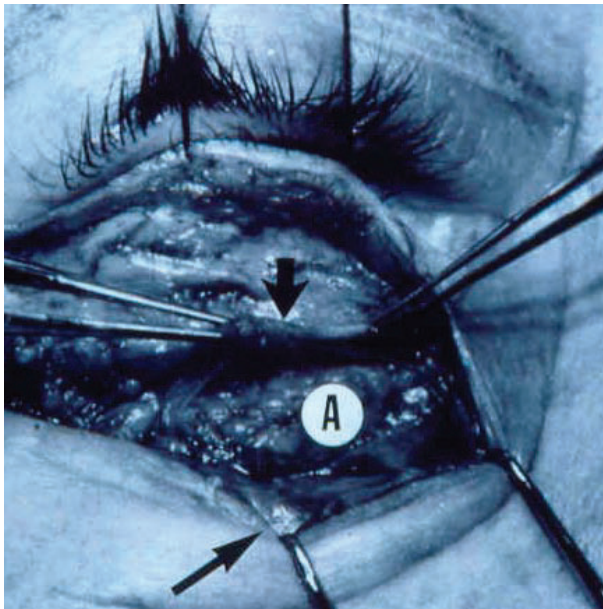
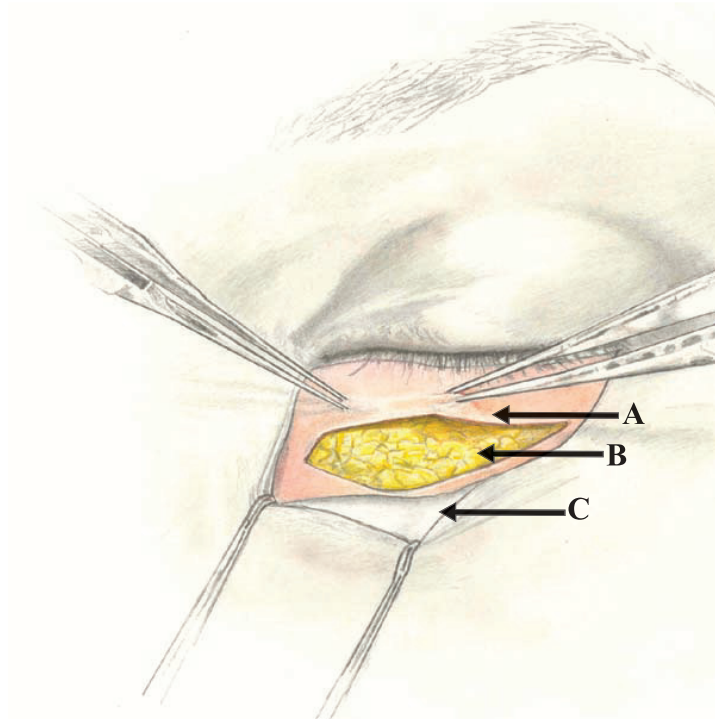


Fig.2(A) Identification of herniated (B) between capsulopalpebral fascia (A) and inferior extent of orbital septum (C). **(B)** Intra-operative photo of herniated fat (A) between capsulopalpebral fascia (superior broad arrow) and inferior extent of orbital septum (inferior thin arrow)

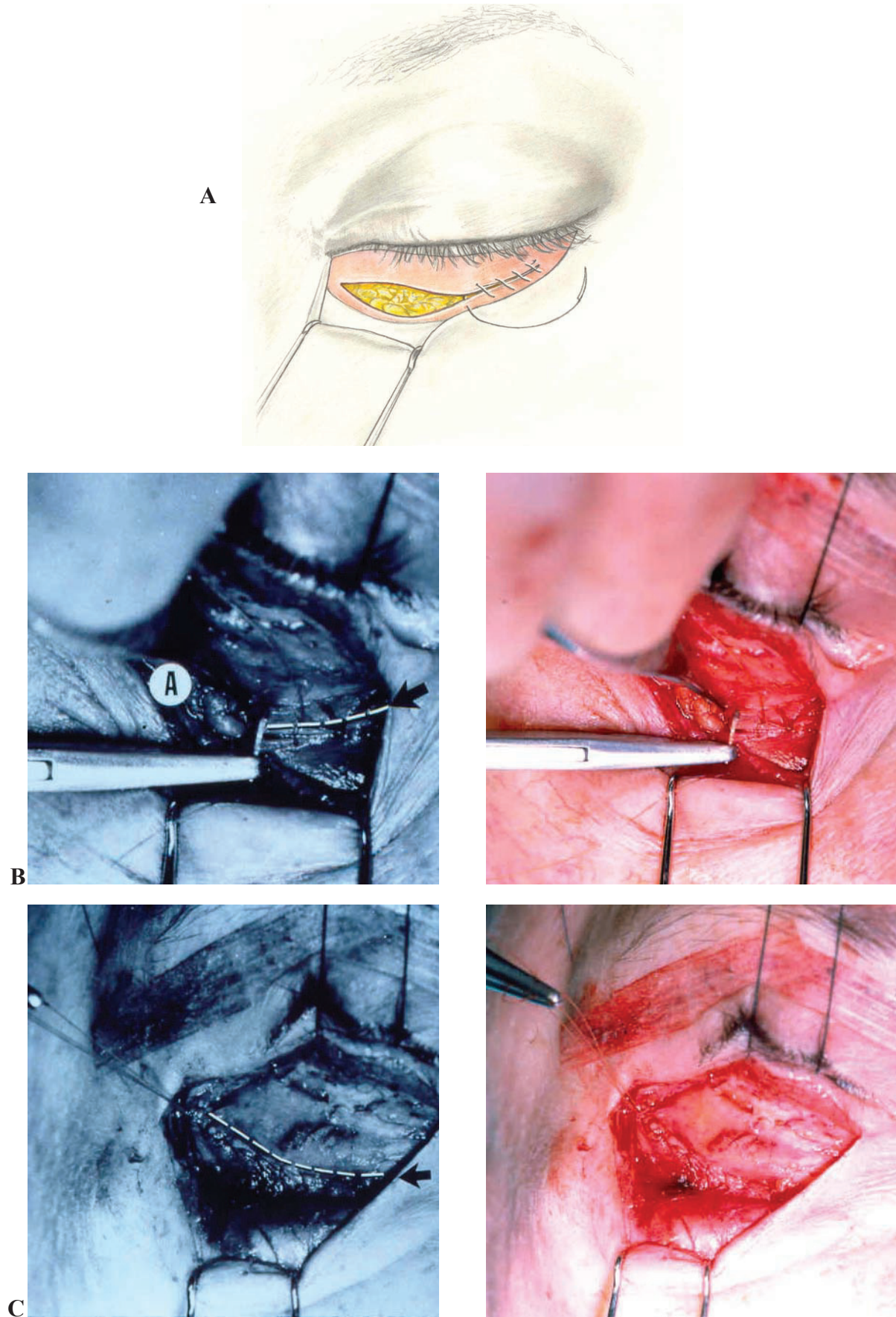


Fig.3(A) Diagrammatic representation of hernia repair. (B) Intraoperative photo of hernia repair (dotted line) proceeding from later (arrow) to medial. Herniated fat still evident medially (A). (C) Completed repair from arrow (laterally) along dotted line to tied suture (5-O Chromic) still atted needle holder

	Excisional technique (250) patients	Hernia repair technique (35 patients)
Recurrent prolapse	17	0
Postop bleed	2	0
Contour defect:		
Convex	6	0
Concave	5	0
Ectropion-permanent	0	0
Ectropion-transient	13	1
Decrease in visual acuity	0	0
EOM imbalance	0	0
Persistent lymphedema	3	1

^aProcedural breakdown: routine excisional technique - 250 cases; herniation repair technique - 35 cases.
Total cases = 285, incidence = 14%

technique was not used. Table 1 outlines the remainder of the complications recorded in this series. Figure 4 reveals the results obtained with this technique.

General statements about herniation of periorbital fat have appeared in the literature [1, 3, 5, 7, 8]. The concept of a true periorbital fat herniation in the causation of baggy eyelids, however, has not previously been explored. Various causes of baggy eyelids have been attributed to a weakness or stretching and attenuation of the orbital septum caused by a degeneration with aging or to a congenital absence of the septum.

From our clinical series it has been observed that once a skin muscle flap was elevated in the lower eyelid, herniated periorbital fat was noted in specific cases. A thin fibrous connective tissue sac appeared to be covering this bulging fat and at first this was thought to be the attenuated orbital septum. On further dissection more antero-inferiorly, the true firm orbital septum was found. It was still attached to the orbital rim with no thinning or weakened areas found. It was apparent that this thick, firm, fibrous septum had become dehiscent from the underlying (capsulopalpebral) fascia at the white line region and that the thin, loose, connective tissue sac covering the herniated periorbital fat was, in fact, the sub orbicularis fascia. In the presence of a prolapsing of underlying soft tissue structures between firm dehiscent overlying supporting structures, a diagnosis of a true surgical hernia was made.

Surgical correction entailed repair of the dehiscent overlying structures by reapproximation of the orbital septum to the capsulopalpebral ligament approximately 5 mm from the lower edge of the tarsal plate using 5-O plain sutures.

Not all cases of lower lid blepharoplasty require repair of a dehiscent orbital septum. This is an exacting technique used only when a diagnosis of true dehiscence of the orbital septum from the capsulopalpebral fascia is made. It is our opinion that if such an anatomical defect is found at the time of surgery and repair is accomplished as described above, the reappearance of prolapsing bulging lower lid fat will be prevented.



Fig.4. Forty-six-year-old white male (A) preoperative and (B) two year old status post. True hernia repair

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