

# Unilateral Browlift Operation for Iatrogenic Brow Ptosis

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Brow ptosis, whether unilateral or bilateral, is a cause of cosmetic disfiguration which has got different aetiologies and is treated with various methods. Unilateral paralytic brow ptosis may pose special problem apart from cosmetic reasons, i.e. difficulty in vision on the affected side due to severe degree of pseudoptosis of the lid, resulting in obscuring or affecting binocular vision. In such cases, patient has to lift the brow manually to have binocular vision. We had the opportunity to treat one such case with a direct browlift surgery. This case is being reported here to raise awareness regarding this field.

**B**row ptosis is the drooping of the soft tissues of brow overlying the skeletal supraorbital rim<sup>1</sup>. It may be unilateral or bilateral. Most involutional or senile brow ptosis cases are bilateral which can be corrected by various types of browlift procedures<sup>2</sup>. Few bilateral cases may be due to essential blepharospasm<sup>3, 4</sup> or the inadvertent use of injection botulinum toxin<sup>5</sup>. Unilateral cases are mostly paralytic in nature due to complete or partial facial nerve lesion. Such cases may be traumatic or iatrogenic. The procedure may be done six months to one year after the brow ptosis to allow sufficient time for the nerve regeneration. The essential steps in procedure are the excision of an ellipse of skin, subcutaneous tissue and/or frontalis muscle and placement of permanent suture between deeper tissue of the eyebrow and the periosteum to overcome the effect of gravity, special care is taken to avoid injury to the supraorbital nerve and subsequent development of forehead anaesthesia. When this procedure is performed properly, it gives good cosmetic and functionally satisfying results<sup>6, 7</sup>.

## CASE REPORT

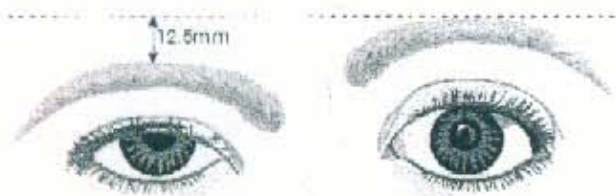
A fifty-four years man, resident of Peshawar, belonging to the executive class, presented with a

complaint of a difficulty in raising his right eyebrow after an operation on January 5, 2004 for 3×2.5 mm growth on the right temporal area. (Biopsy done on February 1, 2004 showed the mass to be angioliopoma). He also complained of limitation in the right visual field. To see clearly with both eyes, he had to lift the right brow manually. He received multiple treatments including physiotherapy and neurotonics till March 20, 2004. Nerve conduction and electromyographic studies on July 1, 2004 showed the injury to the superior (temporozygomatic) branch of right facial nerve and no activity of frontalis muscle noted. Third cranial nerve was normal. Patient's disability progressed to such an extent that psychologically, he felt himself as a partially disabled and handicapped person. Hence he was referred to the eye surgeon for opinion.

On ophthalmic examination, he was found to have right brow ptosis of about 12.5 mm (as compared to the left side). It resulted in 3 mm pseudoptosis and reduced palpebral fissure width on the right side in presence of normal and equal levator palpebrae superioris functions on both sides when subjected to eyebrow lifting test. Loss of wrinkles on right side of forehead was also noticed. Various measurements of his findings are given in table 1 and sketched schematically in figure 1.

**Table 1:** Comparative measurements of the findings in our patient

	Right side	Left side
Lid margin-corneal reflex distance	0.5 mm	3.5 mm
Palpebral fissure width	9 mm	13 mm
Lid margin to lid-crease distance	1 mm	10 mm
Levator palpebrae superioris function (when right brow lifted manually)	17 mm	17 mm
Lid margin to brow apex distance	20 mm	32.5 mm



**Fig. 1:**



**Fig. 2:** Brow ptosis in pre-operative photograph (A) and a normal brow position in a post-operative photograph six months after the surgery (B)

**Diagnosis:** Based on above history, clinical findings, nerve conduction studies and electromyographic findings, he was diagnosed as an isolated case of right paralytic brow ptosis.

**Operative procedure:** We decided direct browlift operation under local anaesthesia on 22<sup>nd</sup> February 2005. Preoperatively, informed consent was taken and we discussed all the relevant points regarding any undesirable outcome. We made an elliptical skin marking at the incision site over the right brow with patient in sitting position, with and without lifting the brow manually. Local anaesthesia was given. Depth of incision was carried to the plane just superficial to the frontalis muscle in the region of supraorbital nerve to

avoid forehead anaesthesia. The wound was closed with deep layers of buried interrupted 5/0 vicryl sutures; essential step being the placement of permanent suture between the eye brow and the periosteum to overcome the effect of gravity.

Postoperative bruising of the lid was noticed in first few days along with slight haematoma formation just above medial part of the right eyebrow. This subsided to a great extent in two weeks time. We removed the sutures on 8<sup>th</sup> post-operative day.

**Follow up:** We saw the patient 1 month and 3 months after the operation. Subjective well-being and cosmetic improvement was satisfactory. He was contacted on telephone about six months after operation. We inquired about his basic complaint of lifting the eyebrow with his fingers/hand, eyebrow level, symmetry on the two sides, degree of scar formation, and haematoma and his psychological well-being. He responded in a very satisfying manner, though he expressed slight concern over faint brow scar and barely noticeable swelling over the medial part of the brow due to very small haematoma formation.

## DISCUSSION

The eyebrow represents a specialized area at the junction of the forehead and upper lids where the frontalis and orbicularis muscles interdigitate. Frontalis muscle contraction elevates it while orbicularis, corrugators and procerus contraction depresses it<sup>8,9</sup>. Aesthetically, ideal brow is positioned slightly above the orbital rim, showing a gentle curve, highest point lies between the lateral limbus and lateral canthus. Descent of the soft tissues overlying the supraorbital rim leads to brow ptosis and dermatochalasis. Patients with brow ptosis may have cosmetic concern or in severe cases, basic complaint may be functional visual field impairment. It is frequently observed condition in patients presenting for upper lid blepharoplasty<sup>10</sup>. It can be diagnosed with the help of simple eyebrow lifting test<sup>11</sup>. It may be classified as mild (< 2 mm), moderate (3-4 mm) and marked (> 4mm)<sup>12</sup>. Facial paralysis usually produces dramatic brow ptosis which may be unilateral or bilateral. Our case had marked (12.5mm) and unilateral brow ptosis. Indications for the treatment of brow include elevation of ptotic eyebrow(s), reduction of upper lid skin, correction of eyebrow asymmetry, reduction of forehead and glabellar rhytids, elevation of forehead aesthetic unit and modification of the hairline if desired. These aims can be achieved with many types of surgeries, variously named as browlift,

forehead lift, brow plasty, browpexy and browplexy. Various procedures include direct browlift, mid-forehead browlift, trichophytic lift, transpalpebral browlift, temporal lift and endoscopic browlift etc. Surgical procedures were published in 1926 by Hunt and detailed account of direct browlift was given by Passot<sup>12</sup>. They also published an extended report on the direct browlift operation from 1989 to 2002 showing a total of 54 operations, out of which 17 were due to seventh cranial nerve palsy. Such cases are usually treated with direct browlift operation in which ellipse of skin, subcutaneous tissue and muscle are resected. Additionally, lateral part of incision is deepened to the loose areolar tissue superficial to the periosteum and deep suture is passed through the periosteum to help fix the position of brow; special care being taken to avoid injury to the supraorbital nerve and vessels. Only significant complications include prominent scars, supraorbital anaesthesia, over-correction, under-correction, exposure keratopathy, haematoma formation and recurrence<sup>10, 12</sup>. We adopted this procedure for our patient, as it offers high degree of reliability and gives good results, both functionally and aesthetically. We were fortunate to achieve the desired effects and not to have any of the significant complications in this patient, except for very faint scar and almost invisible haematoma.

Oculoplastic surgery is in its infancy in Pakistan. Only recently, there has been formation of oculoplastic interest group as Butt has indicated in the editorial of Pakistan Journal of Ophthalmology<sup>13</sup>. However, in the recent past, there seemed to be tremendous awareness in this condition and surgical techniques in some foreign literature<sup>14,15</sup>.

#### CONCLUSION

Direct brow lift procedure with fixation of deeper tissue to the periosteum in paralytic brow ptosis yields good functional and aesthetic results. More work is required on various aspects of this condition.

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