

Subconjunctival ecchymosis due to rhinoplasty*

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SUMMARY

Orbital complications of rhinoplasty show a wide range from minor complications like periorbital edema and ecchymosis to severe complications like blindness. Also, subconjunctival ecchymosis is one of the orbital complications due to rhinoplasty. A prospective study was set out to assess the incidence and progression of subconjunctival ecchymosis and to find out mechanisms of this complication.

The incidence of subconjunctival ecchymosis was found to be 19,1%. Typically it appeared unilaterally or bilaterally over the temporal subconjunctival area in the first two days after the operation. Complete resolution of subconjunctival ecchymosis took approximately 11 ± 3 days. No other ocular symptoms were found. Subconjunctival ecchymosis only prolonged the recovery period of the patient from the rhinoplasty.

Key words: rhinoplasty, orbital complications, subconjunctival ecchymosis

INTRODUCTION

Complications of rhinoplasty are well documented in the rhinologic surgery literature. While the true incidence of complications is not known, it has been estimated to be approximately 10 percent (Holt et al., 1987). The close proximity of the nose and the eyes to each other makes the orbita more susceptible to complications due to rhinoplasty.

Orbital complications of rhinoplasty show a wide range from minor complications like periorbital edema and ecchymosis to severe complications like blindness. From these complications, damage to the lacrimal drainage apparatus was more often studied and is well documented (Flanagan, 1978; Thomas and Griner, 1986). Other reports mainly involve rare complications (Lawson et al., 1983; Cheney and Blair, 1987; Moscona et al., 1991; Hunts et al., 1996; Teigraber and Russo, 1993). Although many reports about orbital complications of rhinoplasty have been published in the literature, to our knowledge there has been no study examining subconjunctival ecchymosis (SE) due to rhinoplasty. A prospective study was set out to assess the incidence and the progression of this situation.

MATERIAL AND METHODS

Seventy-three patients were included in the study, and informed consent was obtained. Each patient was asked about the history of the major nasal trauma, systemic hypertension and the intake of anti-aggregant drugs. For female patients, no operation was performed during or immediately before the menstrual period. Dexamethasone (10 mg) was given intravenously

just prior to the surgery. Operations were carried out under local anesthesia with sedation which was achieved by 2 percent lidocaine and 1:100,000 epinephrine solution. All patients had a dorsal hump removed and a lateral osteotomy using a guided, curved 8mm lateral osteotome (Masing osteotome). In all patients, the lateral osteotomy was performed with lateral decollement of nasal soft tissue. Nasal packing was routinely employed during the two days after the operation. None of the patients received medications other than those used for local anesthesia and intravenous analgesia during the surgery. All patients received similar postoperative care. Blood pressure was monitored during the operation and the post operative period. All complications were recorded. Only acetaminophen was administered as post-operative analgesia, while antibiotics were given for five days, during which the patients were seen daily. Ten, 15 and 20 days after the operation, the patients were seen again and the

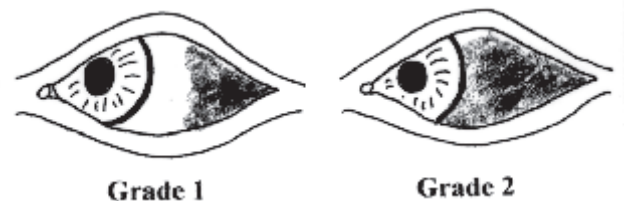


Figure 1. The graded scale for assessing the severity of subconjunctival ecchymosis. The left eye is shown with the patient looking medially. Grade 1: Ecchymosis covers half of the temporal subconjunctival area. Grade 2: Ecchymosis covers nearly all of the temporal subconjunctival area.

day when the SE had disappeared completely was recorded. Severity of SE was evaluated using a graded scale (Figure 1). The eyes of the patients who had SE were examined by an ophthalmologist. A detailed data sheet was completed for each patient. The interrelations among the data were examined by the χ^2 test. P values less than 0.05 were considered statistically significant.

RESULTS

Seventy-three patients (39 woman, 34 men) were entered into the study. Sixty-two patients were operated by the authors, while 11 patients were operated by residents under supervision of the authors. Four of 11 (36,3%) of the residents' cases and 10 of 62 (16,1%) of the authors' (CK and IK) cases had SE. In 4 patients, grade 1 SE (2 bilaterally, 2 unilaterally) developed on the first day after the operation. It progressed to grade 2 on the second day after the operation (Figure 2a and 2b). In 10 patients, grade 1 SE appeared on the second postoperative day unilaterally (3 right eye, 7 left eye). There was no statistical difference of SE incidence between the group with a history of major trauma and the group without ($p > 0.05$, $p = 0.205$). From 11 cases, the day (day $11,2 \pm 3$; max:18, min:7) which SE disappeared completely was recorded. No other accompanying eye symptoms like epiphora, itching, or visual loss were detected. A history of major trauma to the nose was obtained from 23 patients. Three secondary rhinoplasty cases were also included into this group. There was no statistically significant difference in SE incidence between the group with a history of major trauma and the group without ($p > 0.05$, $p = 1.0$). None of the patients had a history of systemic hypertension and no increase in blood pressure was detected during the operation or in the postoperative period.

DISCUSSION

Scarring of tissue and altered anatomy due to previous trauma may increase bleeding and cause the development of SE. Hunts et al. (1996) reported two cases with intraoperative orbital hemorrhage during rhinoplasty. Both of the patients had previous nasal trauma and they proposed an altered anatomy as the cause of this complication. However, in our study, we found no statistically significant relationship between a history of major nasal trauma and SE. SE appeared in the first two days after the operation and may be explained by the behavior of ecchymosis. When blood extravasates from the deep tissues, it may take time to reach the surface because of reflection and the obstruction by various anatomical structures (Knight, 1991). Ecchymosis is more readily to occur in areas with thin, lax skin and in fatty areas. In rhinoplasty patients, ecchymosis develops in the lateral osteotomy regions and then moves through the thin, lax skin of the eyelids and into the periorbital area and periorbital fatty tissues. While the anatomy of the periorbital components prevents its movement medially, ecchymosis moves through the temporal conjunctiva. SE tends to spread, typically, over the temporal subconjunctival area. This could be explained by the anatomy of the periorbital content. Each extraocular muscle is surrounded with a thin fibrous muscle capsule. These capsules are attached by a thin continuous membrane that forms the intermuscular septum. The intermuscular septum fuses with the Tenon's capsule 3 mm from the limbus (Demer et al., 1995). In addition to the medial rectus muscle, both the inferior and superior oblique muscles with their capsules and its fibrous connections run nasally creating a mechanical barrier for the accumulation of blood on the medial side (Porter et al., 1996; Koornneef, 1997). In the temporal region, there is only the lateral rectus muscle and its fibrous connections. This causes less tissue crowding thereby allowing interstitial fluid to accumulate more easily (Campolattaro and Wang, 1999).



Figure 2a. Grade 1 subconjunctival ecchymosis appeared in the temporal, subconjunctival area on the postoperative first day. Arrows show the borders of the subconjunctival ecchymosis.



Figure 2b. The same patient as seen in Figure 2a. Grade 1 subconjunctival ecchymosis progressed to grade 2 on the postoperative second day. Notice the increased periorbital edema and ecchymosis when compared to the appearance on first postoperative day. Arrows show the borders of the subconjunctival ecchymosis.

Additionally, ecchymosis may move under gravity (Knight, 1991). Since patients stay in bed for hours after surgery, also gravity may help to the inferolateral movement of ecchymosis. The incidence of SE was found to be 19,1% in the studied population. Although no statistically significant difference was found between the groups operated by the authors and the residents, respectively, the incidence of SE was higher in the residents' group than in the authors' group. This is most likely due to experience and mastering the technique and probably not to tissue manipulation and trauma, which can decrease the development of SE.

Although it has not been compared in this study, the usage of different type of osteotomes may decrease the incidence of SE. It has been shown that using sharp and micro osteotomes reduce surgical trauma and postoperative ecchymosis (Trenite, 1991; Becker et al., 2000).

It has been reported that while ecchymosis of the eyelids increases in the first two days after the operation, a complete recovery takes approximately 9 days and the patients usually return to a regular social life 9 days after the operation (Kara and Gökalan, 1999). SE showed a similar progress to the course of periorbital ecchymosis. When SE appeared on the first postoperative day, it continued to enlarge on the second day after the operation (Figure 2a and 2b). After SE peaked on the third postoperative day, it began to reduce consistently. While resolution of SE takes approximately 11 days, it prolonged the recovery period for a few days.

In the ophthalmic literature, 'subconjunctival hemorrhage' is mainly used as a term to describe similar conditions as seen in our patients (Fukuyama et al., 1990). The development of SE after rhinoplasty is not the result of trauma directly to either the orbita or conjunctiva, but is due to migration of ecchymosis. For this reason we preferred to use the term 'subconjunctival ecchymosis' instead of subconjunctival hemorrhage.

On the other hand, subconjunctival hemorrhage can frequently develop as a result of minor ocular trauma, systemic hypertension or acute conjunctivitis (Wilson, 1986; Fukuyama et al., 1990). The eyes of our patients were carefully protected against any minor and major trauma during surgery and postoperative care. Neither systemic hypertension nor acute conjunctivitis was detected in these patients.

Since SE does not cause any discomfort or functional deficiency other than a disturbing appearance, it could be accepted as another minor complication of rhinoplasty. On the other hand, SE could be discomforting and sometimes frightening for the patients. In this situation, explanation of the course of SE may help to comfort the patients.

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