

Comparison of Tranexamic Acid and Haemostatic Net in Reducing the Risk of Hematoma in Facelift Surgery

Yüz Germe Ameliyatında Hematom Riskini Azaltmada Traneksamik Asit ve Hemostatik Netin Karşılaştırılması

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Öz

Amaç: Yüz germe ameliyatı, yaşlanma belirtilerini azaltmak ve daha genç bir görünüme kavuşmak için sıklıkla tercih edilen bir estetik cerrahi işlemdir. Yüz germe ameliyatı olan hastalarda hematoma gibi komplikasyonların görülme sıklığı oldukça fazladır. Bu çalışma, yüz germe ameliyatı olan hastalarda traneksamik asit (TXA) ve hemostatik net (ağ) tekniğinin hematoma oluşumunu önlemedeki etkinliğini karşılaştırmayı amaçlamaktadır.

Hastalar ve Yöntem: Çalışmaya Ekim 2019-Şubat 2023 tarihleri arasında derin plan yüz germe ve yüz-boyun germe uygulanan 65 hasta (56 K, 9 E) dahil edildi. Hastalar TXA verilen, hemostatik net uygulananlar, ikisi birden uygulananlar ve hiçbirinin uygulanmadığı kontrol grubu olmak üzere dört farklı grupta değerlendirildi. Hastaların demografik bilgileri, takip bulguları, postoperatif dönemde hematoma ve diğer komplikasyonlar kaydedildi. Gruplar arasındaki farklılıklar istatistiksel olarak değerlendirildi.

Bulgular: Hastaların ortalama yaşı 54'tü. Sadece TXA uygulanan hasta grubu 17 hastadan, hemostatik net uygulanan grup 9 hastadan, her ikisi uygulanan grup 21 hastadan ve kontrol grubu 18 hastadan oluştu. Toplam 6 hastada hematoma görüldü. Sadece hemostatik net kullanılan hastalarda ve sadece TXA kullanılan hastalarda hematoma insidansında sayısal bir azalma gözlemlense de istatistiksel olarak anlamlı değildi ($p>0.05$). TXA ve hemostatik netin birlikte kullanıldığı hastalarda hematoma insidansı istatistiksel olarak anlamlı şekilde azalmıştır ($p<0.05$).

Sonuç: Traneksamik Asit ve hemostatik netin birlikte hematoma insidansını azaltmada etkili olduğu gösterildi. Hemostatik net kullanımı, hematoma insidansında istatistiksel olarak anlamlı bir azalma ile sonuçlanmıştır. Bu önlemlerin cerrahi sonuçları iyileştirebileceği ve hastaların iyileşme sürecini hızlandırabileceği düşünülmektedir.

Anahtar Kelimeler: Yüz germe, traneksamik asit, hemostatik net, hematoma

Abstract

Aim: Facelift surgery is a frequently preferred aesthetic surgery procedure to reduce the signs of aging and achieve a more youthful appearance. The incidence of complications such as hematoma is quite high among patients undergoing facelift surgery. This study aims to compare the efficacy of TXA and hemostatic net technique in terms of preventing hematoma formation in facelift surgery patients.

Patients and Methods: The study included 65 patients (56 F, 9 M) who underwent deep plan facelift and face and neck lift between October 2019 and February 2023. Patients were evaluated in four different groups: TXA given, those applied hemostatic net, those applied both, and the control group applied neither. Demographic information, follow-up findings, any hematoma or other complications in the postoperative period were recorded. Differences between the groups were evaluated statistically.

Results: The mean age of the patients was 54 years. The patient group using only TXA consisted of 17 patients, the group hemostatic net applied consisted of 9 patients, the group applied both consisted of 21 patients, and the control group consisted of 18 patients. Hematoma was observed in 6 patients in total. Although a numerical decrease in the incidence of hematoma was observed in patients in whom only hemostatic net was used and in patients in whom only TXA was used, it was not statistically significant ($p>0.05$). The incidence of hematoma decreased that is statistically significant in patients in whom TXA and hemostatic net were used together ($p<0.05$).

Conclusion: Tranexamic Acid and hemostatic net both together showed to be effective in reducing the incidence of hematoma. It is thought that these measures may improve surgical outcomes and accelerate the recovery process of patients.

Keywords: Facelift, tranexamic acid, hemostatic net, hematoma

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INTRODUCTION

Facelift surgery is a frequently preferred aesthetic surgery procedure to reduce the signs of aging and achieve a more youthful appearance. This type of surgery usually involves reshaping the skin and underlying tissues. However, the incidence of complications such as hematoma is quite high among patients undergoing facelift surgery (1). A hematoma can result in the accumulation of blood in the surgical site, potentially negatively affecting aesthetic results and prolonging the healing process.

Hematoma is one of the most common complications after facelift surgery (1-3). Therefore, some measures and techniques are applied to reduce the risk of hematoma after facelift surgery (4-6). Among these measures, tranexamic acid (TXA) and hemostatic net technique have been frequently used in recent years (7,8). TXA is a drug used as an antifibrinolytic agent and promotes blood clotting (7). There are a limited number of studies on the efficacy of TXA in facelift surgery patients. Some of these studies have shown that tranexamic acid reduces intraoperative blood loss and bruising (7). However, more information is needed on the potential side effects and optimal dosage of this drug.

The hemostatic net technique is a method used to achieve hemostasis at the surgical site (8). This technique is an intermittent continue suture technique that is placed on the skin to control small vessels in the surgical site and minimize bleeding. Hemostatic net has the potential to reduce the risk of hematoma by reducing the need for postoperative drainage. This study aims to compare the efficacy of TXA and hemostatic net technique in terms of preventing hematoma formation in facelift surgery patients.

PATIENTS AND METHODS

The study included 65 patients (56 F, 9 M) who underwent deep plan facelift and face and neck lift between October 2019 and February 2023. The study was designed retrospectively. Written and verbal consent was obtained from the patients. Ethics committee approval was obtained (0716 - 2023). Patients were evaluated in four different groups: TXA

given, those applied hemostatic net, those applied both, and the control group applied neither. Patients with bleeding disorders, history of aspirin use, and uncontrolled hypertension were excluded from the study. Patients were routinely followed up in the hospital for 2 nights postoperatively. Demographic information, follow-up findings, any hematoma or other complications in the postoperative period were recorded. Patients who developed hematoma were re-operated and the hematoma was intervened. Differences between the groups were evaluated statistically.

Each patient received one Jackson-Pratt drain on each side. At the end of the operation, each patient wears the same type of facial corset. The patient is not removed from the bed for 6 hours in a 45-degree reclining position. At the 4th hour, TXA 250 mg administered as IV inf. for 20 minutes. A total of 2 ampoules of 250 mg TXA are administered, one at the beginning of the surgical skin incision and the other at the 4th hour postop. Haemostatic net is applied with 2.0 PDS. It is removed on the 3rd day with drains.

Statistical Analysis

The data analysis was carried out using IBM SPSS Statistics version 20 (IBM Corp., Armonk, NY, USA). Statistical analysis involved performing Chi-Square test, and P values < 0.05 were considered to indicate significance.

RESULTS

The mean age of the patients was 54 years (min 42 - max 79). The patient group using only TXA consisted of 17 patients, the group hemostatic net applied consisted of 9 patients, the group applied both consisted of 21 patients, and the control group consisted of 18 patients. Hematoma was observed in 6 patients in total (Table 1.) Two patients with hematoma were in the only TXA group. Four patients belonged to the control group. The hematoma appeared at the 8th postoperative hour at the latest. No hematoma was observed in any of the patients in whom hemostatic net was applied. In addition, hematoma was not observed in patients in whom the hemostatic net was removed on the 3rd day. The

Table 1. Groups and number of patients with hematoma

Groups	Number of patients	Hematoma
Only TXA	17	2
Hemostatic Net	9	0
TXA and Hemostatic Net	21	0
Control Group	18	4

mean follow-up period was 6 months (min 4 - max 14 months). In 2 patients with hematoma, partial skin loss was observed in an area of 1 cm² and was left for secondary healing. Nerve defect, infection or other complications were not observed in any patient. TXA and hemostatic net is thought to reduce the incidence of hematoma. Although a numerical decrease in the incidence of hematoma was observed in patients in whom only hemostatic net was used and in patients in whom only TXA was used, it was not statistically significant ($p>0.05$). The incidence of hematoma decreased that is statistically significant in patients in whom TXA and hemostatic net were used together ($p<0.05$).

DISCUSSION

Hematoma is the most common complication in facelift surgery (9). The incidence requiring surgical intervention ranges from 1% to 15% (10). Male gender is a risk factor for hematoma (11). Hematomas can present as bleeding from small collections to a very serious amount and speed. While self-limiting hematomas of 5 - 10 ml can be drained with the help of injectors. Arterial bleeding, rapidly developing, widespread swelling, bleeding that causes ecchymosis should be re-operated with an emergency approach. Although hematomas usually appear in the first 24 hours, most major hematomas are 10-12 days old. observed per hour. Late manifestations of hematoma include swelling and discoloration of the lips and buccal mucosa (1,2,8).

If a hematoma is suspected, all dressings should be removed and the entire surgical site examined. When a progressive hematoma is observed, some of the sutures should be removed to provide drainage to reduce tension in the skin flaps. Afterwards, he should be taken to the operating room without wasting time. In cases where this treatment approach is not applied or the hematoma is not noticed, very serious complications may occur. Skin flap loss, wound dehiscence, infection, contour deformity and pigmentation changes can be observed.

Cold compress and pressure dressing are common general applications for hematoma prevention. The use of drains is common, but it has not been conclusively shown in the literature to reduce the risk of hematoma (12). It has been proven in the literature that postoperative hypertension is closely associated with hematoma formation (13). Post-operative pain, vomiting, retching, early and excessive mobility can cause sudden increases in blood pressure and

lead to hematoma (3,14,15). Systolic pressures above 150 mmHg are generally suggested as the cut-off value for hematoma (10,16). We think that hypotensive anesthesia as in nasal surgeries would not be appropriate. Since the patient wakes up after the surgery, which is completed by keeping the blood pressure low, the vessels that do not bleed during the operation may begin to bleed when the blood pressure is normal. This increases the risk of hematoma (17).

This study aims to compare TXA and hemostatic net technique to reduce the risk of hematoma after facelift surgery. Our results suggest that TXA may be effective in reducing the incidence of hematoma and hemostatic net application also plays an important protective role. TXA, as an antifibrinolytic agent, promotes blood coagulation and may reduce the risk of hemorrhage (7). In this study, we observed that the incidence of hematoma in patients receiving TXA was lower than in the control group. These results support that Tranexamic Acid is an effective option to prevent hematoma formation in facelift surgery patients. However, more research is needed on the potential side effects and optimal dosage of TXA.

On the other hand, we found that the hemostatic net technique was effective in reducing the incidence of hematoma. No hematoma formation was observed in patients who underwent hemostatic net, whereas the incidence of hematoma was significantly higher in the control group. It is thought that hemostatic net reduces the risk of bleeding by providing control of small vessels in the surgical area. In addition, the hemostatic net reduces the need for postoperative drainage, which may increase its effectiveness against hematoma. These findings suggest that the hemostatic net technique may be an important option to reduce the risk of hematoma after facelift surgery.

In the long-term follow-up of our patients, serious complications due to hematoma were rare. Partial skin loss was observed in only two patients and was treated with secondary healing. Nerve defect, infection or other serious complications were not observed in any patient. This shows that TXA and hemostatic net can be used safely and reliably.

The limited number of patients in the groups and the retrospective design of the study can be said to be the limitations of the study.

CONCLUSION

This study compared tranexamic acid and hemostatic net technique to reduce the risk of hematoma in facelift surgery patients. Tranexamic

acid and hemostatic net both together showed to be effective in reducing the incidence of hematoma. It is thought that these measures may improve surgical outcomes and accelerate the recovery process of patients. However, further research and comprehensive clinical trials will support these findings and determine the optimal methods of use.

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REFERENCES

1. Kamer FM, Song AU. Hematoma formation in deep plane rhytidectomy. *Arch Facial Plast Surg* 2000;2:240-2.
2. Moyer JS, Baker SR. Complications of rhytidectomy. *Facial Plast Surg Clin North Am* 2005;13:469-78.
3. Bloom JD, Immerman SB, Rosenberg DB. Face-lift complications. *Facial Plast Surg* 2012;28(3):260-72.
4. Marchac D, Sándor G. Face lifts and sprayed fibrin glue: An outcome analysis of 200 patients. *Br J Plast Surg* 1994;47:306-9.
5. Zoumalan R, Rizk SS. Hematoma rates in drainless deep-plane face-lift surgery with and without the use of fibrin glue. *Arch Facial Plast Surg* 2008;10:103-7.
6. Jones BM, Grover R, Hamilton S. The efficacy of surgical drainage in cervicofacial rhytidectomy: A prospective, randomized, controlled trial. *Plast Reconstr Surg* 2007;120:263-70.
7. Al-Hashimi M, Kaur P, Charles W, et al. A Systematic review of the efficacy and safety of tranexamic acid in facelift surgery. *Aesthet Surg J* 2023:sjad213.
8. Auersvald A, Auersvald LA. Hemostatic net in rhytidoplasty: An efficient and safe method for preventing hematoma in 405 consecutive patients. *Aesthetic Plast Surg* 2014;38(1):1-9.
9. Cristel RT, Irvine LE. Common complications in rhytidectomy. *Facial Plast Surg Clin North Am* 2019;27(4):519-27.
10. Clevens RA. Avoiding patient dissatisfaction and complications in facelift surgery. *Facial Plast Surg Clin North Am* 2009;17(4):515-30.
11. Rohrich RJ, Stuzin JM, Ramanadham S, et al. The modern male rhytidectomy: Lessons learned. *Plast Reconstr Surg* 2017;139(2):295-307.
12. Jones BM, Grover R, Hamilton S. The efficacy of surgical drainage in cervicofacial rhytidectomy: A prospective, randomized, controlled trial. *Plast Reconstr Surg* 2007;120(1):263-70.
13. Berner RE, Morain WD, Noe JM. Postoperative hypertension as an etiological factor in hematoma after rhytidectomy. Prevention with chlorpromazine. *Plast Reconstr Surg* 1976;57:314-9.
14. Norred CL, Brinker F. Potential coagulation effects of preoperative complementary and alternative medicines. *Altern Ther Health Med* 2001;7:58-67.
15. Baker DC, Stefani WA, Chiu ES. Reducing the incidence of hematoma requiring surgical evacuation following male rhytidectomy: A 30-year review of 985 cases. *Plast Reconstr Surg* 2005;116:1973-85.
16. Chaffoo RA. Complications in facelift surgery: Avoidance and management. *Facial Plast Surg Clin North Am* 2013;21(4):551-8.
17. Moris V, Bensa P, Gerenton B, et al. The cervicofacial lift under pure local anaesthesia diminishes the incidence of post-operative haematoma. *J Plast Reconstr Aesthet Surg* 2019;72(5):821-9.