Prognostic Model for Predicting the Probability of Post-Rhinoplastic Complications, Accounting for Patients Potential Confounding Factors

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KEYWORDS
Tranexamic acid; Thermoplastic splinting; Dexamethasone; Multivitamins; Post-rhinoplastic procedural complications; Composited complications of interest; regressional predictive model.

ABSTRACT

Objectives: Post-rhinoplasty complications prognosticating can improve frontal appearance accuracy, but research on their occurrence is limited. Addressing postoperative complications and discussing them before surgery can enhance patient satisfaction and ensure a safe and successful procedure.

Methods: This study examined the outcomes of rhinoplastic surgery in patients with various conditions, including those with previous maxillofacial interventions, cardiovascular or coagulopathy disorders, uncontrolled high blood pressure, and severe nasal deformities. Patients were excluded from the study due to their age, gender, and other factors. The study was approved by the Institutional Review Board/Human Subjects Committee of the Faculty of Medicine at Hashemite University. Patients were given nasal packing, antibiotics, painkillers, and instructions on postoperative care. A cox-regressional proportional hazard model was used to predict the likelihood of complications following rhinoplasty. The study focused on composited outcomes (cOI) and evaluated the significance of ∑points. The study included a primary comparison group, which consisted of better cOI (∑cOI <3) and poorer cOI (∑cOI≥3). The data was collected and analyzed using Microsoft Office LTSC Professional Plus 2021 Excel and IBM SPSS Statistics version 25.

Results: A study of 269 patients underwent rhinoplasty surgery, with 63.57% having better cOI and classified as Group I. However, 36.43% had poorer cOI and were placed in Group II. The study included 143 women (53.2%) and 126 men (468.8%) participants. There were no statistically significant differences between the rates of men and women in Groups I and II. The study also dichotomized patients' ages into those under 35 years and those over 35 years. The distribution of patients' comorbidity burden was significant across Group I-II when the AACCI score was dichotomized into <3 and ≥3 categories. There was a significant difference in the rates of death in the non-administered Dex IV group and the administered Dex IV group. MVs were given less often versus more often, and the rates of distribution were also statistically different between Groups I and II. The study found a significant spread of both conservative strategies across Groups I and II. The cox-regressional proportional hazard modelling revealed a significant adjusted hazard ratio (HR) for all tested potential confounders except for patients' age and gender. Both TXA and TP had a negative impactful coefficient, while both potential confounders of experiencing perioperatively Dex IV and previous regularity of MVs supplementations had significantly reduced directional effects on the probability for cOI..

Conclusion: The study found a significant adjusted hazard ratio (HR) for all potential confounders except age and gender. Intraoperative TXA and post-procedural TP had a negative impactful coefficient. Perioperative Dex IV and

previous regularity of MVs supplementations reduced the probability of cOI. However, patients' potential confounders of AACCI and OS had significantly adjusted HR but positively impactful on cOI.

INTRODUCTION

The primary goals of unitary rhinoplasty are to enhance the aesthetic appearance of the nose while minimising any impact on its breathing function. When rhinoplasty is performed for specific health-care reasons, patients often experience confusion and frequently complain that no improvements have been made to their breathing after the surgery. The focus on disease quality is typically superseded by more traditional considerations in rhinoplasty. When the plastic procedure is combined with functional enhancement, there is intense pain. Improving the ratio between the nose and face has significant benefits for the appearance and social life of patients, particularly when addressing issues such as excessive facial symmetry or visual angle problems caused by using earphones. Treatments targeting the nasal passageways effectively address chronic rhinopsic conditions. Deformities of the nasal pyramid can cause a range of respiratory symptoms including excessive nasal discharge, headaches, nasal blockage, difficulty breathing, and snoring. In many cases, these symptoms are associated with a more severe respiratory disturbance syndrome. The excessive growth of the middle and inferior nasal conchae greatly hinders the proper functioning of the nasal passages. [1-5]

Rhinoplasty is a contemporary surgical procedure used to repair or restore the nasal structure. This procedure can be carried out solely for aesthetic reasons, with or without any accompanying reconstruction. It is extremely beneficial for patients who are experiencing significant distress, as it enhances their quality of life. Rhinoplasty remains the most popular procedure in recent cosmetic surgeries, as cosmetic patients have become increasingly demanding and realistic regarding the potential for success. The field of rhinoplasty is continuously evolving. The fascination with the subject emerged during the period of 1500-1700 A.D., however, it was not until around 1900 that genuine techniques for nasal surgery were developed. The more modern forms of rhinoplasty were only developed later in history as a result of advancements in plastic surgery techniques. In this new millennium, the focus is on the ongoing pursuit of established and effective techniques. Hence, gathering precise and current information on this subject from existing literature poses a challenge. [6-9]

The nose, a vital facial organ for respiration and appearance, is frequently affected by both inborn and acquired traumas. An injury, as defined by the World Health Organisation, refers to unintentional harm that affects the body, encompassing various types such as mechanical, chemical, thermal, electrical, and radiation injuries. Nasal injuries can have significant effects on one's appearance, venous circulation, and even ocular abnormalities in the short or long term. Based on hospital administrative data and epidemiological reports, traumatic nasal fractures were the predominant form of facial fractures in sports-related injuries. It has been frequently observed that nasal fractures accounted for 40% to 50% of all facial injuries. It is important to mention that there is currently no precise data or accurate estimation available regarding the exact number of nasal injuries, particularly among individuals who do not seek medical advice or in outdated hospital records. [10-13]

Rhinoplasty is a complex form of plastic surgery that typically involves operating on multiple areas of the nose. Due to this factor, rhinoplasty is susceptible to postoperative tissue adhesion, deformity, asymmetry, airway obstruction, and other complications. Furthermore, it is challenging to mitigate and even more arduous to rectify. Facial plastic surgery, specifically minimally invasive procedures like cosmetic rhinoplasty, is gaining popularity worldwide. Several Asian countries also aspire to achieve Caucasian standards of beauty. Nevertheless, rhinoplasty is often associated with typical postoperative complications. As per the survey conducted by the American Academy of Facial Plastic and Reconstructive Surgery (AAFPRS), the most frequent complication observed is minor swelling of the nose, also known as nasal edoema, which accounts for 42.6% of cases. The most common complications following minor

edoema include major edoema (30.0%), ecchymosis (18.0%), tip shape issues (17.9%), cartilage/bone problems (14.7%), and nasal obstruction (14.0%). [14-17]

An objective investigation of the complications arising from post-rhinoplasty enhances the accuracy of the frontal appearance. Nevertheless, research on postoperative complications, particularly in terms of accurately predicting their occurrence, is still limited. Improving patient satisfaction after rhinoplasty can be achieved by addressing postoperative complications. Additionally, discussing these complications before surgery plays a crucial role in ensuring a safe and successful procedure. Hence, the objective of this study was to create a prognostic model capable of forecasting the likelihood of complications following rhinoplasty.

METHODS AND MATERIALS

An observational, retrospective study was conducted at Hashemite University in Zarqa, Jordan, from 2019 to 2023. The study was not funded. The investigation examined individuals who were present and had undergone various types of rhinoplastic surgery. The study was not open to patients who had undergone revision surgery or previous maxillofacial intervention, had a history of cardiovascular or coagulopathy disorders, or had uncontrolled high blood pressure. Patients who required an additional osteotomy during surgery for rocker or step deformities on either side, as well as those who were younger than 18 or older than 60 years old, were also excluded from the study. Female patients were advised to schedule their surgeries for a period following their menstrual cycle. Additionally, patients who had a nasal subcutaneous tissue thickness of >7 mm, a severe nasal deformity requiring a secondary rhinoplasty, a combined operation on other parts of the face at the same time, drug or anaesthetic allergy, autoimmune diseases, heart, liver, kidney, and lung serious organ diseases that could not tolerate surgery, hepatitis, or AIDS were also excluded from this study.

This study was approved by the Institutional Review Board/Human Subjects Committee of the Faculty of Medicine at Hashemite University. Informed consent was unnecessary for this investigation, as it examined historical events. The patient's information was obtained by reviewing hospital records. All patients' demographics, anthropometrics, comorbidity burden (as determined by the age-adjusted comorbidity index), use of tranexamic acid, dexamethasone, and multivitamins, type of splinting used after rhinoplasty (thermoplastic or non-thermoplastic), scores for complications after the procedure, and the duration of the rhinoplasty procedure in minutes were incorporated. Additionally, the preoperative Weber test, preoperative smell test, preoperative visualisation of the middle turbinate, diabetes mellitus, and tobacco exposure were also incorporated. The anonymization of all data exported for the purpose of obtaining useful information in this study was implemented.

Nasal packing that was not excessively tight was administered to all patients during the procedure. Additionally, patients were provided with instructions regarding their postoperative care. The patients were administered antibiotics for a period of five days, and painkillers were administered until the pain was tolerable. Additionally, patients were instructed to elevate their heads. Kara et al. developed a system that allowed for the grading of periorbital swelling from 0 to 4. A score of 0 indicates that there is no swelling, a score of 1 indicates that the iris is barely covered, a score of 2 indicates that the iris is fully covered, a score of 3 indicates that the iris is fully covered, and a score of 4 indicates that the eyelid is closed. Post-rhinoplastic ecchymosis is graded on a scale of 0 to 4, with higher values indicating more severe ecchymosis. Ecchymosis is not present when a score of 0 is assigned. Ecchymosis that is restricted to the medial half and does not affect the lateral quarters is indicated by a score of 1. Ecchymosis affecting the lower and/or upper medial quarters, without involvement of the lateral quarters, is indicated by a score of 2. Ecchymosis is present in the lower and/or upper medial quarters, as well as the lower lateral quarter, but not in the upper lateral quarter, which is indicative of a score of 2. Ecchymosis is present in all four quarters and is between ½ and ¾ of the lower and upper eyelids, as indicated by a score of 3. A score of 4 indicates that the ecchymosis is more than ¾ of the lower and upper eyelids. The post-rhinoplastic

subconjunctival haemorrhages were classified as either Grade I or Grade II. Grade I is defined as up to 50% of the temporal subconjunctival area, while Grade II is defined as at least 90% of the temporal subconjunctival area. The patient was evaluated by the primary surgeon on the day following surgery prior to discharge. The patient was subsequently evaluated at the outpatient clinic during follow-up visits at 7, 14, and 21 days following the surgery. The findings of the assessments conducted at each subsequent appointment subsequent to surgery. The operation of these post-rhinoplastic swelling grading systems is illustrated in Figure 1.

In order to predict the likelihood of complications following rhinoplasty, we implemented a cox-regressional proportional hazard model for the predetermined potential confounders. The potential confounders in this study included the following: the use of a post-procedural thermoplastic (TP) splint versus a standard splint, the intraoperative infusion of 2 g of tranexamic acid (TXA) versus non-experienced TXA, the age of the patient (>35 years or <35 years), the comorbidity burden (≥3 or <3) as defined by the AACCI, the presence of obesity in the patient, the frequency of multivitamin consumption preoperatively, and the administration of dexamethasone perioperatively. The probability of experiencing either better or worse outcomes of interest was compared to the aforementioned potential confounders. This study focused on composited outcomes (cOI) and underscored the significance of ∑points that were either >2 (indicating a poorer cOI) or ≤2 (indicating a better cOI). In this study, the ∑cOI was evaluated as follows: 1 point was awarded for a post-rhinoplastic swelling score of ≥3, 0 point for a score of <3, 1 point for a post-rhinoplastic ecchymosis score of ≥3, 0 point for a score of <3, 1 point for a post-rhinoplastic subconjunctival haemorrhage grade of 2, 0 point for a grade of <2, and 1 point was awarded for a complete post-rhinoplastic recovery that was achieved over 7 days post-procedural, or 0 point for a full recovery from the postrhinoplasty complications within 7 days post-procedural. We regarded the cOI as poorer if the ∑cOI points exceeded 3, and better if the ∑cOI points were less than 3.

This study subsequently included our primary comparison group, which consisted of better cOI (∑cOI <3) and poorer cOI (∑cOI≥3). The chi square test was employed to investigate the distribution rates of the independent variables under investigation, as well as the significance of the correlations. The patient data for this study was collected and sorted using Microsoft Office LTSC Professional Plus 2021 Excel. IBM SPSS Statistics version 25 was implemented for statistical analysis. A significance level of 0.05 was employed in this investigation.

RESULTS

A total of 269 patients underwent testing and attended appointments for rhinoplasty surgery. Out of the total number of patients who attended, approximately 63.57% (171 patients) who underwent rhinoplastic surgery had a better cOI and accordingly were classified in Group I. On the other hand, this study previously determined that approximately 36.43% of patients had a poorer cOI, and thus placed them in Group II.

A total of 143 women (53.2%) and 126 men (468.8%) participated in this study. There were not statistically significant differences between the rates of men and women in Groups I and II, with 81 (47.4%) males and 90 (52.6%) females compared to 45 (45.9%) males and 90 (52.6%) females ($\chi 2$ (1) = 0.0534, p-value = 0.819). It was found that the odd ratio for gender was 0.943 (95% CI: 0.573–1.552), and the correlation between Groups I and II was -0.014±0.061. This study dichotomized patients' ages into two categories: those under 35 years and those over 35 years. Totally, approximately 74% of the tested patients (199 patients) had an age<35 years, while in contrast, approximately 26% (70 patients) had an age≥35 years. Based on this age threshold, we didn't reveal a statistically significant difference across better and poorer cOI-related groups [($\chi 2$ (1) = 2.521, p-value = 0.11]. The corresponding age-related odd ratios and correlates were determined at [1.566 (95% CI; 0.898–2.730) and -0.016±0.052, respectively].

In particular, 100 people (58.5%) in Group I had normal body weight indexes, while 33 people (33.7%) in Group II did. Similarly, 71 (41.5%) of the people in Group I were overweight, while only 65 (66.3%) of the people in Group II were overweight. The statistical test showed that this distribution was significant ($\chi2$ (1) = 15.336, p-value = 0.000). The odd ratio was found to be 2.774 (95% CI: 1.653–4.656), and the Pearson correlation was 0.239±0.059. In the case of the patients' comorbidity burden as stated by their AACCI score, we revealed in this study that there was a significant distribution rate across Group I-II when the AACCI was dichotomized into <3 category and ≥3 category ($\chi2$ (1) = 52.76, p-value = 0.000). Both the AACCI-related odd ratio and correlation were revealed at 8.015 (95% CI: 4.401–14.595) and 0.443±0.052, respectively. Approximately 81.6% (80 patients) compared to approximately 18.4% (18 patients) in the poorer cOI group had AACCI≥3 versus AACCI<3, respectively. While in the better cOI group, approximately 35.7% (61 patients) compared to 64.3% (110 patients) had AACCI≥3 versus AACCI<3, respectively.

When it came to giving Dex IV before surgery and MVs before surgery, there was a statistically significant difference between the groups with better and worse cOI. In the non-administered Dex IV group, 76 (44.4%) and 65 (66.3%) patients died, and in the administered Dex IV group, 95 (55.6%) and 33 (33.7%) patients died ($\chi2$ (1) = 11.96, p-value = 0.001). MVs were given less often versus more often, and the rates of distribution were also statistically different between Groups I and II: 61 (35.7%) and 78 (79.6%) vs. 110 (64.3%) and 20 (20.4%), respectively ($\chi2$ (1) = 0.48.12, p-value = 0.000). The odd ratios and correlations in this study were revealed at 0.406 (95% CI: 0.242–0.681), -0.211±0.059, and 0.142 (95% CI: 0.079–0.255), -0.423±0.053, respectively.

Typically, in our study, 134 people (49.8% of those who didn't experience tranexamic acid) used it during surgery, while 135 people (50.2% of those who did) used it during surgery. Adjunctively, approximately 54.6% of our whole studied cohort (135 patients) underwent post-rhinoplastic thermoplastic splinting, compared to approximately 45.4% (122 patients) who underwent standard post-rhinoplastic procedure splinting instead of thermoplastic splinting. There was a statistically significant spread of both conservative strategies across Groups I and II, with odd ratios and Pearson correlations of 0.394 (95% CI: 0.236–0.659), -0.219±0.059, and 0.360 (95% CI: 0.216–0.601), -0.241±0.060, respectively. Table 1 represents the results of the chi-square test on the variables that were studied in two groups. .

When we conducted the cox-regressional proportional hazard modelling for each tested aforementioned potential confounder against the probability of occurring cOI in our studied patients, we revealed a significant adjusted hazard ratio (HR) for all tested potential confounders except for patients' age and their gender. Regarding experiencing 2 g of TXA intraoperatively, we stated that HR (95% CI; LB-UB) was 0.557 (95% CI; 0.369-0.843), 2 (1) = 8.010, p-value = 0.005. While utilising post-procedural T, we also showed a HR of 0.533 (95% CI; 0.354–0.801), 2 (1) = 9.446, p-value = 0.002. Both TXA and TP have a negative impactful coefficient [-0.585±0.211 and -0.630±0.208, respectively]. Similarly, both potential confounders of experiencing perioperatively Dex IV and previous regularity of MVs supplementations had significantly reduced directional effects on the probability for cOI [-0.530±0.214 and -1.134±0.252, respectively] with adjusted HR of [0.589 (95% CI; 0.387-0.895)], $\chi2$ (1) = 6.431, p-value=0.011] and [0.322 (95% CI; 0.196-0.527), $\chi2$ (1) =24.462, p-value=0.000]. In contrast, both patients' potential confounders of AACCI and OS had significantly adjusted HR [3.432 (95% CI; 2.053-5.738), $\chi2$ (1) =27.550, p-value=0.000] and [1.945 (95% CI; 1.275-2.969), $\chi2$ (1) =10.049, p-value=10.049], respectively, but positively impactful on the cOI [1.233±0.262 and 0.665±0.216, respectively]. The Cox-regressional proportional hazard modelling results are presented in Table 2 below.

DISCUSSION

Rhinoplasty surgery is a complex procedure that involves various surgical techniques and can be considered an art of defining, sculpting, and balancing limitations for surgeons and patients. However, early literacy and a willingness to help patients manage risk factors are essential for successful results. Proper pre-operative planning and informed consent are crucial for achieving the best results. A wide range of proven protocols can make patients feel comfortable, safe, and happy. [18-20]

The incidence and timing of post-rhinoplasty complications are primarily influenced by three key factors: the surgeon's level of experience, the ratio of DSM/surgeons' procedure volume within specialists, and the patient's genetic, psychological, physiological, and health status. The experience of the surgeon directly influences the patient's expectations. Complications arising after rhinoplasty, particularly those related to psychological and aesthetic aspects, can pose a significant problem. [21-23]

In this study, surgeon specialists and their team examined potential factors that could have an impact before, during, and after the procedure. These factors included the use of perioperative dexamethasone IV, the administration of antifibrin tranexamic acid during the procedure, the regularity of taking multivitamins with or without trace elements before the procedure, and the use of a thermoplastic splint after the procedure. [24-26]

Positive confounders of patients, such as obesity status, gender, comorbidity burden, and age, were also examined. Knowing the estimated complication rate before surgery and providing assistance in obtaining the right psychological and psychological support connections encourages first-timers to consider their physiological, concomitant pathologies and complications early and prepares the attending physician and first stage. [27-29]

The establishment of the rhinoplasty prognosis model fulfills the unmet need for a comprehensive tool that accounts for the relationships among multiple preoperative factors that may influence recovery outcomes. This tool can enable more precise, personalized rhinoplasty treatment planning and contribute to improving outcomes for patients seeking rhinoplasty. [30-32]Rhinoplasty is a common cosmetic procedure in the United States, with over 200,000 procedures reported in 2014. The psychological impact of rhinoplasty can be significant, and healthcare burden from nasal deformities, aesthetic shortcomings, surgical infections, pain, side effects from antibiotics, and nasal packing materials must also be considered. [33-35]

This guideline aims to provide evidence-based recommendations for clinicians performing rhinoplasty or involved in the care of a rhinoplasty candidate, optimizing patient care, promoting effective diagnosis and therapy, and reducing unnecessary variations in care. [36]A multi-institutional analysis by Knoedler S et al. examined postoperative outcomes and risk factors for adverse events after rhinoplasty surgery. The study involved 835 patients, with 72% undergoing primary procedures, 21% a secondary procedure, and 6.7% a cleft nasal deformity procedure. The average patient age was 41±17 years, with most being female and white. Complication rates were generally low, with reoperation and superficial incisional infection being the most common general and surgical adverse events. Male sex and higher ASA scores were identified as risk factors for complications. Low serum albumin and hematocrit levels were associated with the occurrence of any complication and the incidence of surgical adverse events. [37]

The study concluded that rhinoplasty complications were generally low and correlated with male sex and ASA scores. Preoperative albumin and hematocrit were identified as predictive biomarkers of adverse events, suggesting that preoperative nutritional optimization and management of low hematocrit may improve postoperative outcomes. [38]

Another study by Wu SS et al. aimed to identify risk factors for complications after forehead flap reconstruction. The study involved a retrospective analysis of 190 patients who underwent forehead flaps between 2007 and 2020. The results showed that 25.4% of patients developed a complication, including impaired nasal function, flap congestion, infection, poor

donor site healing, wound dehiscence, and flap congestion. Factors such as female sex, immunosuppression, prior radiotherapy, and larger resection area were associated with complications. Multivariate analysis revealed female sex, hypoalbuminemia, and prior wide local excision as predictors of complications. [39]

A clinical calculator was developed incorporating these risk factors, with a C-statistic of 0.85, indicating strong predictive value. The study provides a comprehensive review of risk factors for complications after forehead flap reconstruction and a novel risk-stratification scheme to optimize outcomes. However, the study has limitations, such as the use of a retrospective design, the limitation of conducting the study in a single center, and not examining the prolonged consequences of various nasal splints or patient satisfaction with their postoperative care. Further longitudinal investigations are necessary to examine the enduring consequences of various nasal splints, including patient satisfaction and aesthetic outcomes over an extended duration.

CONCLUSION

The study found a significant adjusted hazard ratio (HR) for all potential confounders except age and gender. Intraoperative TXA and post-procedural TP had a negative impactful coefficient. Perioperative Dex IV and previous regularity of MVs supplementations reduced the probability of cOI. However, patients' potential confounders of AACCI and OS had significantly adjusted HR but positively impactful on cOI.

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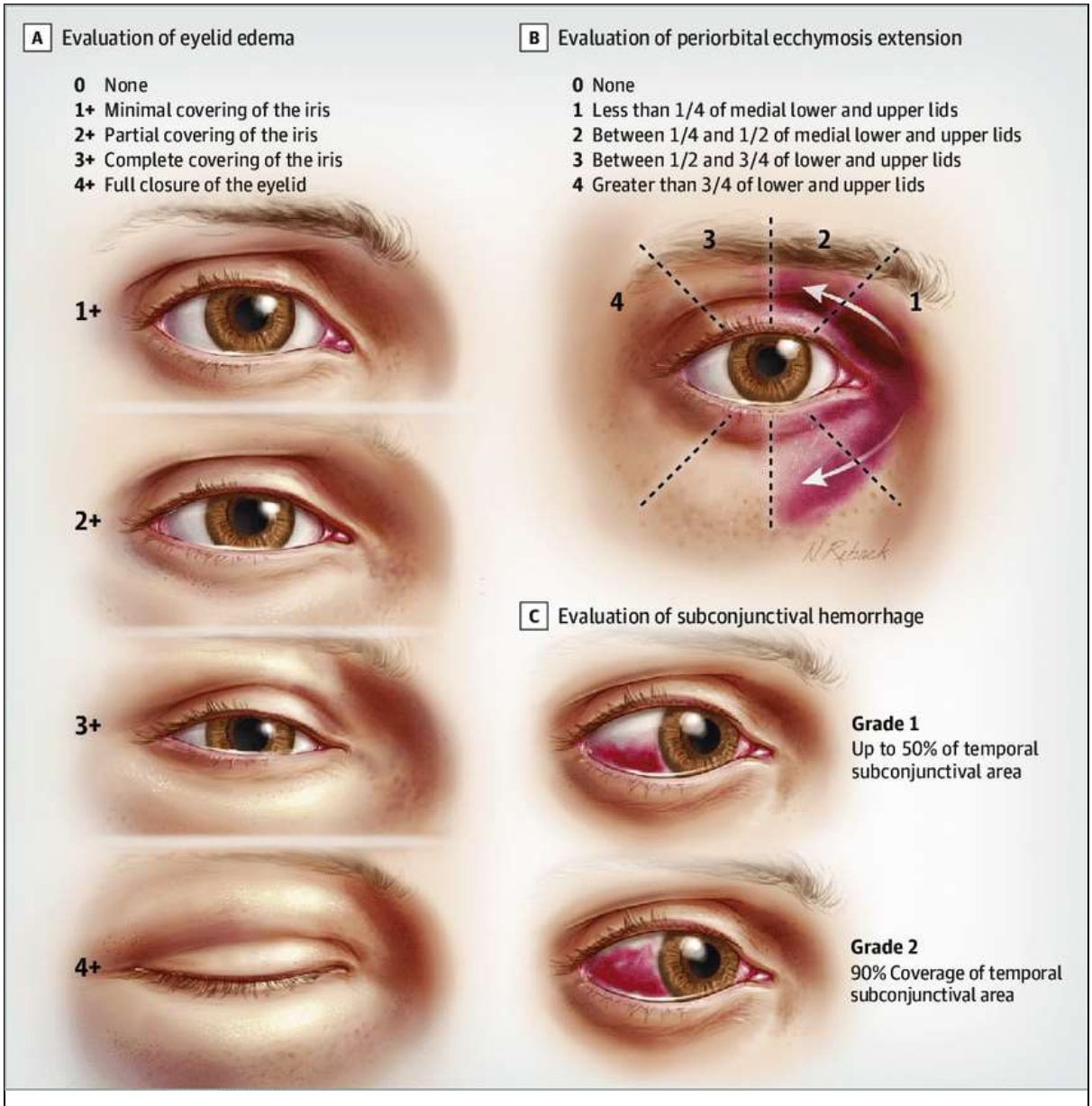

Figure 1. Post-rhinoplastic complications.

Table 1. Chi square analyses result across better cOI and poorer cOI groups.

	Group I Better cOI n==171 (63.57%)	**Group II Poorer cOI n=98 (36.43%)**	**Overall Cohort 269**	**Odd Ratio**	**χ2 (df) p-Value**	**R±SEV**
TXA						
No	71 (41.5%)	63 (64.3%)	134 (49.8%)	0.394 (95% CI; 0.236-0.659)	12.915 (1) 0.000	-0.219± 0.059
Yes	100 (58.5%)	35 (35.7%)	135 (50.2%)			
TP						
No	62 (36.3%)	60 (61.2%)	122 (45.4%)	0.360 (95% CI; 0.216-0.601)	15.669 (1) 0.000	-0.241±0.060
Yes	109 (63.7%)	38 (38.8%)	147 (54.6%)			
Age (Yrs)						
<35	132 (77.2%)	67 (68.4%)	199 (74.0%)	1.566 (95% CI; 0.898-2.730)	2.521 (1) 0.112	-0.016±0.052
≥35	39 (22.8%)	31 (31.6%)	70 (26.0%)			
Gender						
F	90 (52.6%)	53 (54.1%)	143 (53.2%)	0.943 (95% CI; 0.573-1.552)	0.053 (1) 0.819	-0.014±0.061
M	81 (47.4%)	45 (45.9%)	126 (46.8%)			
AACCI						
<3	110 (64.3%)	18 (18.4%)	128 (47.6%)	8.015 (95% CI; 4.401-14.595)	52.760 (1) 0.000	0.443±0.052
≥3	61 (35.7%	80 (81.6%	141 (52.4%)			
Dex						
No	76 (44.4%)	65 (66.3%)	141 (52.4%)	0.406 (95% CI; 0.242-0.681)	11.960 (1) 0.001	-0.211±0.059
Yes	95 (55.6%)	33 (33.7%)	128 (47.6%)			
MVs						
No	61 (35.7%)	78 (79.6%)	139 (51.7%)	0.142 (95% CI; 0.079-0.255)	48.120 (1) 0.000	-0.423±0.053
Yes	110 (64.3%)	20 (20.4%)	130 (48.3%)			
Obs statues						
No	100 (58.5%)	33 (33.7%)	133 (49.4%)	2.774 (95% CI; 1.653-4.656)	15.336 (1) 0.000	0.239±0.059
Yes	71 (41.5%)	65 (66.3%)	136 (50.6%)			

TXA: Tranexamic acid.
TP: Thermoplastic.
Dex: Dexamethasone.
Obs: Obesity statues.
TP: Thermoplastic.
MVs: Multivitamins supplement.
AACCI: Age adjusted charlson comorbidity index.
R: Pearson correlation.
SEV: Standard error of value
cOI: Composited outcomes of interest

Table 2. Cox-regressional hazard proportional hazard model results for the tested potential confounders against the patients' cOI.

	B±SE	Sig.	Exp(B) (95% CI; LB-UB)	χ2 (df) p-Value
TXA [Naïve (0) vs experienced (1)]	-0.585±0.211	0.006	0.557 (95% CI; 0.369-0.843)	8.010 (1) 0.005
TP [Naïve (0) vs experienced (1)]	-0.630±0.208	0.002	0.533 (95% CI; 0.354-0.801)	9.446 (1) 0.002
Age <35 yrs (0) vs ≥35 yrs (1)	0.250±0.218	0.251	1.284 (95% CI; 0.838-1.968)	1.277 (1) 0.258
Gender F (0) vs M (1)	-0.093±0.203	0.648	0.912 (95% CI; 0.613-1.357)	0.209 (1) 0.648
AACCI AACCI <3 (0) vs AACCI ≥3 (1)	1.233±0.262	0.000	3.432 (95% CI; 2.053-5.738)	27.550 (1) 0.000
Dex [Naïve (0) vs experienced (1)]	-0.530±0.214	0.013	0.589 (95% CI; 0.387-0.895))	6.431 (1) 0.011
MVs [Naïve (0) vs experienced (1)]	-1.134±0.252	0.000	0.322 (95% CI; 0.196-0.527)	24.462 (1) 0.000
OS BMI<25 Kg/m	0.665±0.216	0.002	1.945 (95% CI; 1.275-2.969)	10.049 (1) 0.002

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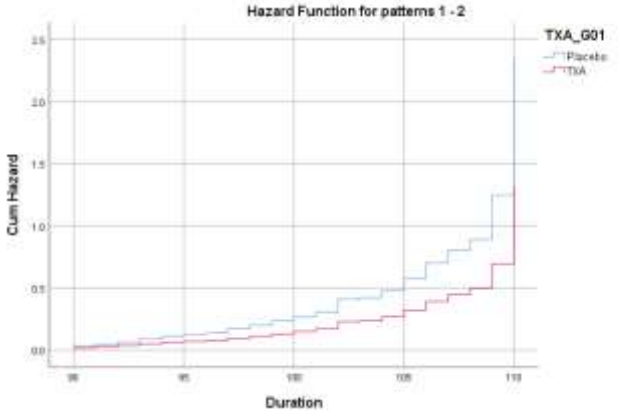
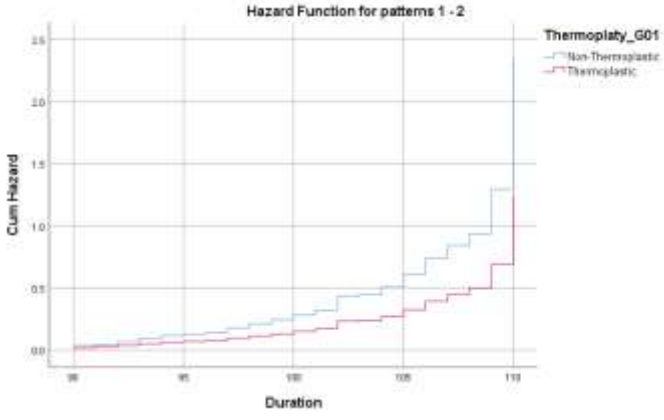
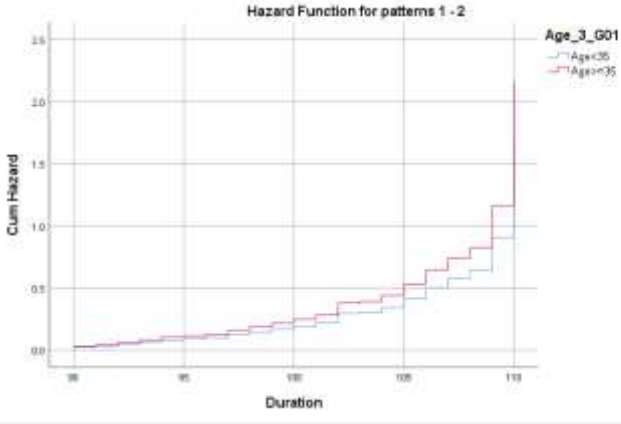
Hazard function for TXA vs cOI



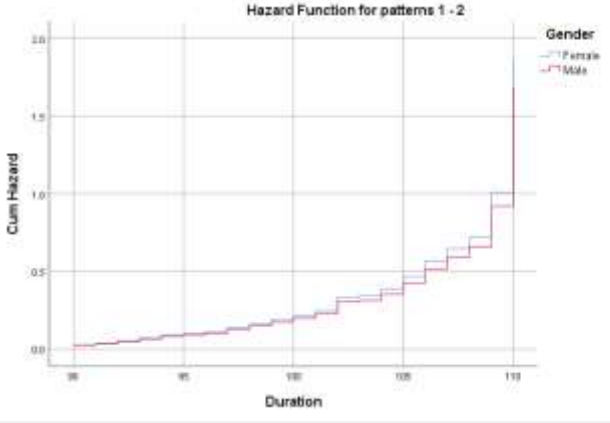
Hazard function for TP vs cOI



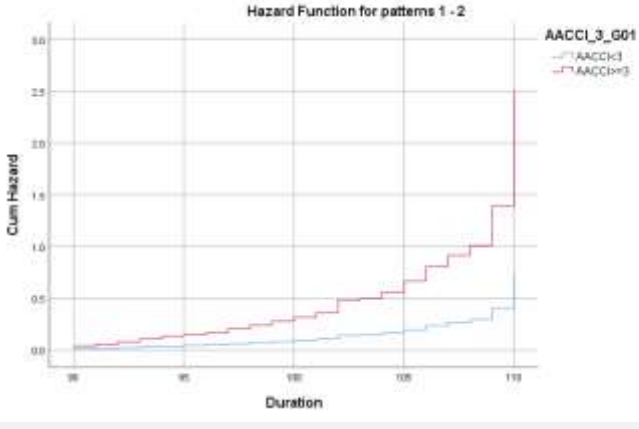
Hazard function for Age category vs cOI



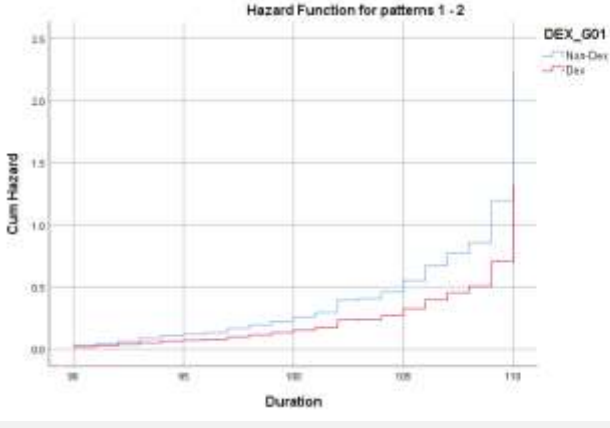
Hazard function for gender vs cOI



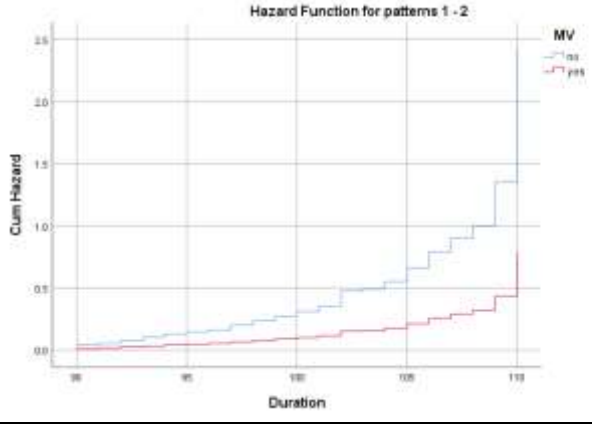
Hazard function for AACCI category vs cOI



Hazard function for Dex category vs cOI



Hazard function for MV vs cOI



Hazard function for OS vs cOI

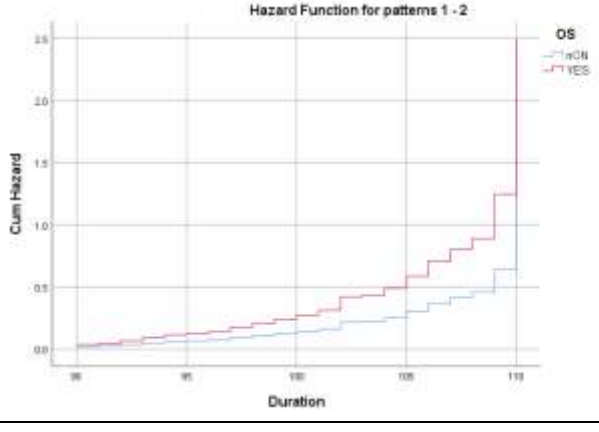


Figure 2. Cox-regressional hazard functions illustrations for the tested potential confounders vs cOI

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