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Results Evaluation of the Effect of Anesthesia on Plastic Surgery

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ABSTRACT

Background: The advancements in plastic surgery, in conjunction with the development of anaesthesia, have enabled the fulfilment of almost all the desired outcomes of those seeking such procedures. **Objective:** This study was analysed and assessed for overall clinical outcomes which were associated with the role of anesthesia in plastic surgery. **Patients and methods:** The current study focused on evaluating the clinical outcomes of individuals participating in rhinoplasty under local anesthesia and general anesthesia, whose ages ranged between 25-40 years, and which included 70 patients from different hospitals in Iraq for a period from February 6, 2022, to August 25, 2023. This study compared the results of anesthesia techniques for general anesthesia, sedation, and local anesthesia on patients during and after surgery in terms of surgery time, anesthesia time, rate of pain and complications, quality of anesthesia, patient satisfaction rate, and quality of life for patients after surgery. **Results:** Comparing anesthesia techniques, our study recorded the clinical outcomes of patients during surgery in terms of operative time was 192.04 ± 36.51 , duration of anesthesia was 207.13 ± 38.56 , heart rate was 82.15 ± 34.67 , systolic blood pressure was 110.58 ± 35.12 , diastolic blood pressure was 76.43 ± 11.54 , and The number of bleeding cases was 8, the number of deaths was 5, the rate of complications after surgery for patients under general anesthesia was 11, the rate of pain for patients after surgery in the first month was 6.6 ± 1.5 and in the seventh month it was 0.78 ± 0.35 , the quality of life of patients recorded in the physical aspect was 66.20 ± 5.73 . As for the emotional aspect, it was 58.17 ± 7.42 .

On the contrary, the results of the general anesthesia group showed better

improvements compared to general anesthesia in terms of operation time 172.51 ± 26.82 , duration of anesthesia 190.32 ± 28.12 , heart rate 85.35 ± 7.42 , systolic blood pressure was 84.32 ± 10.57 , and diastolic blood pressure was 67.15 ± 5.78 . The number of bleeding cases was 2, the rate of complications after surgery for patients under local anesthesia was 4, the pain rate in the first month was 4.2 ± 0.5 , while in the seventh month, it was 2.56 ± 0.85 , the physical aspect was 83.68 ± 3.85 , and the emotional aspect was 83.31 ± 9.55 . Conclusion: Local anesthesia provides high success rates in rhinoplasty, which has the advantages of lower rates of pain, bleeding, and mortality during surgery, which results in a high satisfaction rate compared to general anesthesia.

Introduction

Plastic surgery, in all its modalities - has evolved along with anesthesia in such a way that now almost all the goals of the people who request them can be satisfied. This fact forces surgeons and anesthesiologists to stay at the top of professional practice to maintain certification through continuing medical education and clinical research that together led to excellent results. [1,2]

Patients who consult a plastic surgeon do so to improve their body appearance to achieve the image of a beautiful body, increase their self-esteem, and be more competitive in a globalized world where appearance is a determining factor of success [3]. Most are looking for different alternatives for a long time; that search on the Internet, with friends, with patients, in locations local or distant from their place of residence, inside or outside their country. Some of them make face-to-face consultations with several plastic surgeons before deciding where they should undergo surgery [4-6]. They seek perfection and full satisfaction to their demands, the best price, and high expectations with each planned surgical procedure. Small or catastrophic complications have no place in the results. Medical care for these people with special expectations is a continuous challenge - a constant challenge that remains at the top of professional practice and can achieve excellent results while remaining competitive in a market of more and more medical professionals. Fortunately, complications in this clinical setting are rare, but they are often catastrophic and, to a lesser extent, can be fatal. As in other areas of surgery, anesthesia, adherence to existing guidelines and recommendations is mandatory to avoid possible unwanted effects. [7-10]

Fear and anxiety are sensations inherent to human beings, which are expressed in general when the patient will undergo surgery [11]. The importance of the interpretation of fear and anxiety lies not only because of its incidence in the study of anesthetic quality control but also and basically in that the somatic manifestations of fear can produce relevant effects in the anesthetic-surgical experience of the patient and in medical practice, observing intestinal disorders, sleep disturbances, palpitations, and muscle tension, among others [12,13]. Anesthesia suppresses the control of the ego; its functions will be abolished, and that's where fear and anxiety erupt in anticipation and, at the same time, as an effect of its own ineffectiveness of defense [14]. The fact of carrying out the preoperative assessment and offering information, from a psychological point of view, allows us to better orient the patient who is going to receive anesthesia and thereby raise the quality of care. This statement translates into high percentages in fear or anxiety to anesthesia.[15]

The perception of plastic surgeons in the United States is very strong. The development of

the specialty and the reconstruction and aesthetic treatments developed must be exposed to know and be able to exalt them so that they are finally recognized by themselves and strangers. It is necessary for the professional himself, as well as for the scientific societies, to differentiate and to work hard in the exaltation of the specialty. The perception of the plastic surgeon in Ecuador, even as dictated by health professionals, is still in relation to the determinants “aesthetic-cosmetic” converting it and taking the reconstructive Plastic surgeon to the level where empirical practices are performed by “aesthetic surgeons.” [16,17]

Aesthetic surgery is not a superfluous decision, as it is still seen; it is an issue that must be addressed with the seriousness of any other medical procedure, and therefore, its implications must be recognized as refers to the knowledge of the anesthetic processes to which patients can undergo. [18]

In plastic surgery, it is common to combine two or more surgical procedures, which, in addition to increasing the risk, increases the operative time, and with this, the anesthetic plan must be adapted to the new approach of surgeons and their patients. This fact can be determined before starting anesthesia, and in some patients, it is modified during surgery. [19]

Patients and methods

We conducted a cross-sectional study of patients who underwent plastic surgery on the nose under anesthesia, which included 70 patients whose ages ranged between 25-40 years from different hospitals in Iraq for a period from February 6, 2022, to August 25, 2023. Clinical data and demographic characteristics of patients were collected preoperatively in terms of age, sex, body mass index, comorbidities, ASA, smoking factor, type of anesthesia used, employment status, and income level. This study determined the types of surgeries patients underwent under both general anesthesia and local anesthesia.

Regarding the surgical results of the patients, 70 patients who underwent rhinoplasty were collected. One group of them underwent surgery under general anesthesia and included 35 patients, and another group included 35 other patients who underwent surgery under local anesthesia in terms of surgery time, anesthesia time, extubation time, eye-opening time, and patient examinations. During surgery, heart rate, diastolic and systolic blood pressure, number of cases of bleeding, length of hospital stays, recovery time during clinical follow-up for seven months, mortality rate, and complications to which patients were exposed after surgery. Our results determined the complication rate, and we also measured the patients' pain rate during the 7-month follow-up. Furthermore, the quality levels of anesthesia were measured and evaluated using the Richmond Agitation and Sedation Scale (RASS), which is a healthcare tool for patients by measuring patient response and adjusting sedation levels with a range of scores from +4 to -5. All patients' results and clinical data were analyzed and evaluated through the SPSS program, version 22.0. This study excluded patients who had previous plastic surgeries, pregnant women, people under the age of 25, or people who had severe chronic diseases.

Results

Table 1: Demographic and preoperative clinical characteristics.

Characteristics	Number of patients [n=70]	Percentage [%]
Age		
25 – 29	33	47.14%
30 – 34	25	35.71%
35 – 40	12	17.14%
Sex		
Males	21	30.0%
Females	49	70.0%
BMI		
18.5 – 24.9	35	50.0%
25 – 29.9	21	30.0%
> 30.0	14	20.0%
Comorbidities		
Non	42	60.0%
Diabetes mellitus	2	2.86%
Hypertension	7	10.0%
Coronary diseases	4	5.71%
Respiratory diseases	5	7.14%
Obesity	10	14.29%
ASA		
I	20	28.57%
II	37	52.86%
III	13	18.57%
Smoking status		
Yes	23	32.86%
No	47	67.14%
Anesthesia used		

General	35	50.0%
Regional	35	50.0%
Employment status		
Employed	54	77.14%
Unemployed	16	22.86%
Income level, \$		
Less than 700 \$	27	38.57%
More than 700 \$	43	61.43%

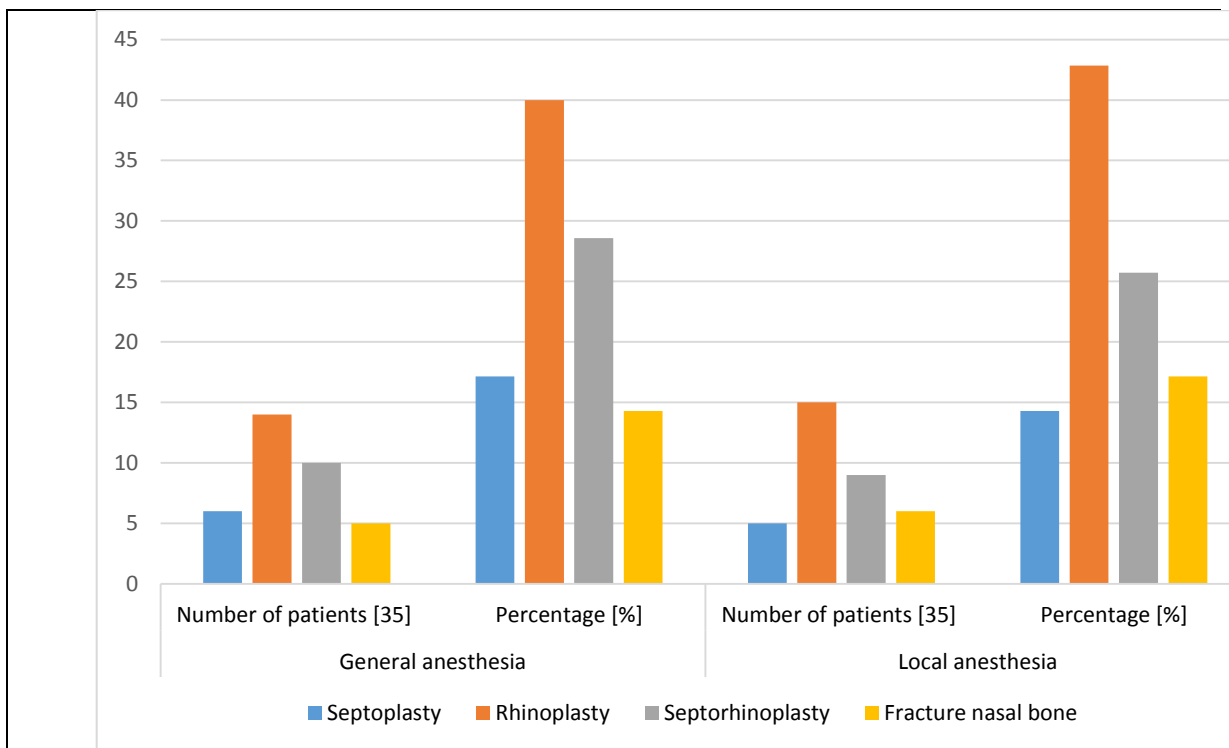


Figure 1: Determine surgeries conducted on patients under anesthesia in both groups.

Table 2: Intraoperative and postoperative outcomes of patients in this study.

Outcomes	GA Group [35]	LA Group [35]	P-value
Operative time [min], (mean ± SD)	192.04 ± 36.51	172.51 ± 26.82	0.196
Anesthesia time [min], (mean ± SD)	207.13 ± 38.56	190.32 ± 28.12	0.164
Extubating time (min), (mean ± SD)	6.77 ± 1.53	1.85 ± 1.01	< 0.001
Eye-opening time (min), (mean ± SD)	9.34 ± 2.53	3.42 ± 1.14	< 0.001
Heart rate (mean ± SD)	82.15 ± 34.67	85.35 ± 7.42	< 0.001
Systolic blood pressure [mm Hg], (mean ± SD)	110.58 ± 35.12	84.32 ± 10.57	0.0022
Diastolic pressure [mm Hg], (mean ± SD)	76.43 ± 11.54	67.15 ± 5.78	0.189
Bleeding N [%]	8 [22.86%]	2 [5.71%]	< 0.001
Length of stay, days, Range	4 – 6	1 - 2	0.0468
Recovery time, weeks, (mean ± SD)	4 - 8	4 - 6	0.0422
Follow-up, days, (mean ± SD)	Seven months	Seven months	0.05
Death rate, N [%]	5 [14.29%]	0 [%]	< 0.001

Table 3: Adverse outcomes surrounding patients after surgery.

Outcomes	GA Group [35]	LA Group [35]	P-value
Swelling and Bruising	3 [8.57%]	2 [5.71%]	0.0433
Nasal Obstruction	2 [2.86%]	1 [1.43%]	0.0416
Scarring	1 [1.43%]	0 [0%]	0.0445
Numbness	1 [1.43%]	1 [1.43%]	0.05
Nausea	2 [2.86%]	0 [0%]	0.0264
Vomiting	2 [2.86%]	0 [0%]	0.0264
Total	11 [20%]	4 [8.57%]	< 0.001

Table 4: Post-operative pain score of patients during seven months by VAS scale.

Time [days]	GA Group [35]	LA Group [35]	P-value
Month 1	6.6 ± 1.5	4.2 ± 0.5	0.026
Month 2	5.3 ± 0.8	3.2 ± 0.4	0.0301
Month 3	5.01 ± 0.56	3.4 ± 0.2	0.0363
Month 4	4.7 ± 0.68	3.1 ± 0.1	0.0385
Month 5	3.84 ± 0.68	2.3 ± 0.75	0.0388
Month 6	3.04 ± 0.58	1.11 ± 0.86	< 0.001
Month 7	2.56 ± 0.85	0.78 ± 0.35	< 0.001

Table 5: Assessment levels of anesthesia quality by RASS scale.

RASS > + 1, time [min]	GA Group [35]	LA Group [35]	P-value
0	18 [51.43%]	20 [57.14%]	< 0.0274
10	0 [%]	6 [8.57%]	< 0.001
20	0 [%]	2 [2.86%]	< 0.001
30	0 [%]	2 [2.86%]	< 0.001

Table 6: Patient's satisfaction score and Surgeon's satisfaction score outcomes.

Variables	GA Group [35]	LA Group [35]	P-value
Patient's satisfaction score			
Excellent	14 [40%]	25 [71.43%]	< 0.001

Good	5 [14.29%]	6 [17.14%]	0.0451
Fair	9 [25.71%]	3 [8.57%]	< 0.001
Poor	7 [20%]	1 [2.86%]	< 0.001
Surgeon's satisfaction score			
Grade I	3 [8.57%]	23 [65.71%]	< 0.0001
Grade 2	25 [71.43%]	10 [28.57%]	< 0.0001
Grade 3	7 [20%]	2 [5.71%]	< 0.0001

Table 7: Assessment of quality-of-life outcomes for patients after surgery.

QoL Domains	GA Group [35]	LA Group [35]	P-value
Physical function	66.20 ± 5.73	83.68 ± 3.85	< 0.001
Psychological function	68.57 ± 7.36	75.41 ± 8.61	0.0258
Emotional function	58.17 ± 7.42	83.31 ± 9.55	< 0.001
Social function	72.15 ± 4.68	80.12 ± 6.86	< 0.001

Discussion

Clinical results showed that most of the people who underwent rhinoplasty were in the age group between 25-29 years, with an average of 33 cases. Females were 70.0% higher than males (30.0%). Some people had a BMI of 18.5-24.9, with 35 cases and 25 cases. < 29.9 with 21 cases and > 30.0 with 14, where we found that the proportion of people without comorbidities was 60%. The other percentage is diabetes at 2.86%, high blood pressure at 10%, and obesity at 14.29%. The percentage of smoking patients was 32.86%, and that of non-smoking patients was 67.14%. %, the percentage of workers was 77.14% and non-employed 22.86%, and the ASA came in the second class with 37, the first class with 20, and the third class with 13, where 27 people had an economic income of less than \$700, while 43 people had an economic income higher than \$700.

This study recorded the surgical results of people who underwent surgery, as 11 people underwent septoplasty, 29 people underwent rhinoplasty, 19 people underwent septoplasty, and 11 people underwent nasal bone fracture surgery, as all surgeries were performed under Local anesthesia and general anesthesia. Comparing anesthesia techniques, in the general anesthesia group, the surgical outcomes of the patients were recorded as operative time was 192.04 ± 36.51,

duration of anesthesia was 207.13 ± 38.56 , extubation time was 6.77 ± 1.53 , eyes opening time was 9.34 ± 2.53 , heart rate was 82.15 ± 34.67 , systolic blood pressure was 110.58 ± 35.12 , diastolic blood pressure was 76.43 ± 11.54 , the number of bleeding cases was 8, the length of hospital stay was between 4 - 6 days, and the recovery time was between 4 - 8 days. The follow-up period was seven months, and the number of deaths was 5. With regard to the surgical results of the disease under local anesthesia, the surgical results of the patients were recorded, as the operation time was 172.51 ± 26.82 , the duration of anesthesia was 190.32 ± 28.12 , the extubation time was 1.85 ± 1.01 , and The time of opening the eyes was 3.42 ± 1.14 , the heart rate was 85.35 ± 7.42 , the systolic blood pressure was 84.32 ± 10.57 , the diastolic blood pressure was 67.15 ± 5.78 , the number of bleeding cases was 2, the length of stay in the hospital was between 1 - 2 days, and the duration of Recovery is between 4-6 days, the follow-up period is seven months, and the number of deaths. There were 0 cases.

Regarding the negative outcomes for patients, our results revealed changes and differences in the rate of complications, as the rate of complications after surgery for patients under general anesthesia was 11, while the rate of complications after surgery for patients under local anesthesia was only 4 cases. The most prominent complications were swelling, bruising, nausea, and vomiting. Our study found a decrease in the pain rate in the local anesthesia group, where the pain rate in the first month was 4.2 ± 0.5 , while in the seventh month, it was 0.78 ± 0.35 , but in the general anesthesia group, where the first month showed that the pain rate was 6.6 ± 1.5 , while at the seventh month, it was 2.56 ± 0.85 . This study evaluated the quality of anesthesia using the RASS scale, where at 0 minutes, there were 18 cases, while at 30 minutes, there were 0 cases in the general anesthesia group, while 20 cases at 0 minutes and 2 cases at 30 in the local anesthesia group. Group. This study measured the satisfaction rate among patients. We found a satisfaction rate of 14 excellent cases and only seven poor cases in the general anesthesia group, while the satisfaction rate of 25 cases was excellent and only one poor case in the local anesthesia group. This study also evaluated the quality of life of patients, as we recorded the physical aspect as 83.68 ± 3.85 and the emotional aspect as 83.31 ± 9.55 , which is the most preferred and effective for patients under local anesthesia, while the physical aspect was 66.20 ± 5.73 . The emotional aspect was 58.17 ± 7.42 , which was the worst for patients under general anesthesia.

Previous studies agreed that local anaesthesia provided a safer and more regulated surgical setting. Local anaesthesia, in contrast to general anaesthesia, induces numbness in the nose and adjacent tissues, hence eliminating discomfort during the process. During the patient's conscious and communicative state, the surgeon may meticulously assess the outcome, make any modifications, and verify the attainment of the intended aesthetic outcomes. [20]

An American study found that Local anaesthesia has a reduced likelihood of problems compared to general anaesthesia. General anaesthesia is the process of using drugs to produce a state of unconsciousness and alleviate pain. While typically safe, there are some dangers associated with adverse medication responses, respiratory problems, and cardiovascular consequences. By abstaining from the use of general anaesthesia, the likelihood of these dangers occurring during rhinoplasty is reduced. [21]

Some studies noticed that local anaesthesia accelerates the process of recovery. Due to the patient's consciousness being maintained during the surgery, there is no extended time of wakefulness after general anaesthesia. Patients often have the option to be discharged shortly following surgery, eliminating the need for overnight hospitalisation. In addition, the lack of

adverse effects associated with general anaesthesia, such as drowsiness or nausea, enables patients to resume their normal daily routines more promptly. [22]

Moreover, the consideration of cost-effectiveness supports the preference for using local anaesthesia [23]. The use of general anaesthesia necessitates the presence of an anesthesiologist, specialised equipment, and vigilant monitoring, all of which contribute to the escalation of surgical expenses. The use of local anaesthesia eliminates this extra cost, which makes rhinoplasty surgery more financially accessible for patients. [24]

To similar with last studies, our study agreed doing rhinoplasty with local anaesthesia has several advantages, such as enhanced safety, decreased likelihood of problems, quicker recovery period, and cost efficiency. Local anaesthesia has gained popularity among those seeking cosmetic enhancements to the nose due to its ability to provide a controlled operative environment as well as ensure patient comfort. [25]

Conclusion

In rhinoplasty surgery, local anesthesia causes a lower rate of bleeding and mortality, shortens the surgical time and recovery time, and reduces the rate of complications and pain, which enhances the improvement of the patient's quality of life and a high acceptance rate and postoperative satisfaction when compared with general anesthesia.

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