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Original Research Article

Anesthesia Practice in Maxillofacial Surgery at the Niamey National Hospital (NNH)

Nanzir Sanoussi M[1*], Chaibou MS[1], Daddy H[1], Gagara M[1], Bachar Loukoumi O[1]

[1]Department of Anaesthesiology and Intensive Care, Niamey National Hospital (NNH)

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Abstract: ***Objective*****:** To take stock of the Anesthesia practice in maxillofacial surgery at the National Hospital of Niamey**.** ***Patients and methods*****:** This was a prospective, descriptive study over 5 months from january 2,2024 to May 30,2024. All patients who had received scheduled anesthesia in the operating room for maxillofacial surgery were included in the study**.** The variables studied were: Age, sex, origin, profession, medical and surgical history, ASA classification, Mallampati classification, anesthetic drugs used, tracheal intubation, intraoperative incidents and accidents and patient outcome. Data were entered and analyzed by Microsoft 2016 and Sphinx.v5 Software. The statistical tests used were considered significant for any p-value <0.05. ***Results***: Fifty-seven (57) patients were included; a frequency of 5.42%. Male sex predominated with a sex ratio of 2.27. The average age of our patients was 26,95 ± 3,28 years. The opening of the oral cavity was limited in 19.30% (n=11). The Mallampati class was not appreciable in 43,86% (n=25) of cases. Patients were classified ASA 1 in 75.44% (n=43). Surgery was scheduled in 98.25% (n=56) of cases. Traumatic and tumor pathologies were the most indicated surgeries in 40.35% (n=23) and 38.60% (n=22) of cases respectively. General anesthesia was the anesthetic technique in all our patients. Propofol was the most used hypnotic in 49.12%(n=28). Celocurine was used for induction in 85.96% (n=44). Orotracheal intubation was perfoomed in 71.93% (n=41) of our patients; it was difficult in 38.64%(n=16) of cases. Nasotracheal intubation was performed in 22.18% (n=13). Primary tracheotomy was performed in three of our patients; that is, 5.26%. Tachycardia and hypotension were the most frequent incidents in 33.33% (n=19) and 24.56% (n=14) respectively. Cardiopulmorary arrest occurred in 1.75%(n=1) of cases. Thirty-one point fifty-eight (n=18) of our patients had received a blood transfusion. The duration of surgery was 86 +/- 6 min with extremes ranging from 10 min to 210 min. The duration of anesthesia was 148 +/- 8 min with extremes ranging from 45 min to 330 min. Four patients (7.02%) were transferred to intensive care and the mortality rate was 3.51%. ***Conclusion***: Anesthesia in maxillofacial surgery at the National Hospital of Niamey sometimes poses problems of difficult intubation, hence the need to have diffcult intubation equipment and the performance of the first tracheotomy.

Keywords: Anesthesia, maxillofacial surgery, Niamey National Hospital, Niger.

INTRODUCTION

The specific problems of maxillofacial surgery anesthesia are dominated by maintaining the patency of the upper airway. This takes into account the foreseeable difficulties of intubation, surgical constraints and the state of the airway during the postoperative period [1]. The practice of anesthesia for maxillofacial surgery is experiencing tremendous growth despite foreseeable difficulties. Extubation is a critical moment in these patients, as re-intubation can be difficult; patients must be monitored in a specialized setting for a sufficient time to ensure proper recovery of reflexes [2, 3]. The objective of our study was to take stock of the practice of anesthesia in maxillofacial surgery at the National Hospital of Niamey.

PATIENTS AND METHODS

This was a prospective, descriptive study over 5 months from January 2, 2024 to May 30, 2024. All patients who underwent scheduled anesthesia in the operating room for maxillofacial surgery were included in the study. The variables studied were: Age, sex, origin,

***Corresponding Author:** Nanzir Sanoussi Moutari
Department of Anaesthesiology and Intensive Care, Niamey National Hospital (NNH)

profession, medical and surgical history, Mallampati classification, ASA classification, anesthetic drugs used, tracheal intubation, intraoperative incidents and accidents, and outcome. The data were entered and analyzed using Microsoft 2016 and Sphinx.v5 software. The statistical tests used were considered significant for any p-value <0.05.

RESULTS

Fifty-seven (57) patients were included, representing a frequency of 5.42%. There was a male predominance in 68.42% (n=39) with a sex ratio of 2.27. The mean age of our patients was 26.95 ± 3.28 years. Among the patient's history, gastric ulcer was the most frequent, present in 50% (n=2) of cases. Limited oral cavity opening was observed in 19.30% (n=11). The Mallampati classification was not appreciable in 43.86% (n=25) (Figure 1).

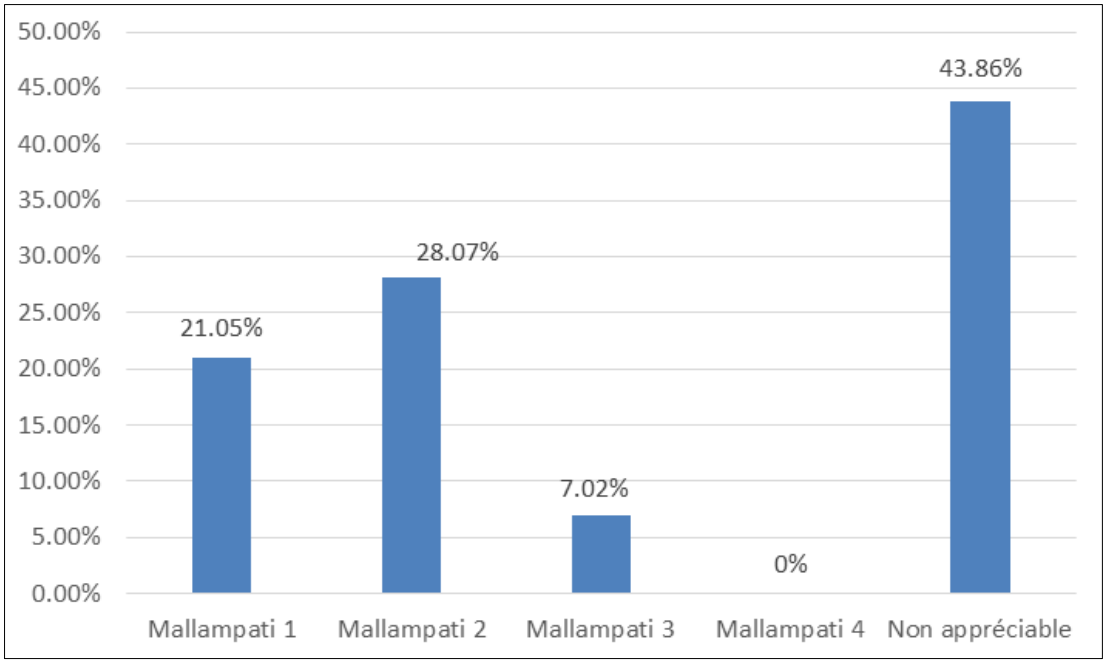

Figure 1: Distribution of patients according to the Mallampati classification

Patients were classified as ASA 1 in 75.44% (n=43). Surgery was scheduled in 98.25% (n=56). Traumatic and tumor-related pathologies were the most frequently performed surgical procedures, accounting for 40.35% (n=23) and 38.60% (n=22), respectively. All patients underwent surgery under general anesthesia. Propofol was the most frequently used hypnotic in 49.12% (n=28). Celocurine was used for anesthetic induction in 85.96% (n=44) of patients. Orotracheal intubation was performed in 71.93% (n=41) of our patients and was difficult in 38.64% (n=16) of cases. Nasotracheal intubation was performed in 22.81% (n=13), and was difficult in 7.69% (n=1) of cases. Three patients underwent a primary tracheotomy (5.26%) (Table I).

Table I: Distribution of patients according to airway control

Airway control	Effective	Percentage (%)
Orotracheal Intubation	41	71,93
Nasotracheal Intubation	13	22,81
Primary tracheotomy	3	5,26
Total	57	100

Tachycardia and hypotension were the most frequent incidents, occurring in 33.33% (n=19) and 24.56% (n=14), respectively. Cardiorespiratory arrest occurred in 1.75% (n=1) of cases. Among our patients, 31.58% (n=18) received a blood transfusion. The average duration of surgery was 86 ± 6 minutes, ranging from 10 to 210 minutes. The average duration of anesthesia was 148 ± 8 minutes, ranging from 45 to 330 minutes. Of our patients, 7.02% were transferred to the intensive care unit, and the mortality rate was 3.51%. There was a statistically significant correlation between death and the ASA score. (Table II)

Table II: Correlation between the occurrence of death and the ASA score

	Death		
ASA score	**Yes**	**No**	**Total**
ASA 1	1	42	43
ASA 2	0	13	13
ASA 3	1	0	1
ASA 4	0	0	0
ASA 5	0	0	0
ASA 6	0	0	0
Total	**2**	**55**	**57**

The deaths occurred during tumor resection in tracheostomized patients. (Table III)

Table III: Correlation between surgical procedures and the occurrence of death

	Death		
Geste chirurgical	**Yes**	**No**	**Total**
Tumor excision	2	24	26
Reconstruction + osteosynthesis	0	22	22
Sequestrectomy + osteosynthesis	0	9	9
Total	**2**	**55**	**57**

DISCUSSION

Fifty-seven (57) patients underwent maxillofacial surgery, representing a frequency of 5.42%. Males predominated at 68.42%, with a sex ratio of 2.27. This predominance was also reported by Benateau A *et al*., in Paris in 2016 and by Owono Etoundi P *et al*., in Yaoundé in 2022, who reported 68.77% and 70.50%, respectively. Our result differs from that of Leye P *et al*., in Dakar in 2015, who reported a female predominance [1-4]. The mean age of our patients was 26.95 ± 3.28 years, with a range from 45 days to 65 years. Leye P *et al*., reported a similar age range of 20 to 40 years, with a frequency of 31% and a mean age of 28 years [1]. Opening the oral cavity was impossible in 21.05% of our patients and limited in 19.30% of cases; Leye P et al., reported limited mouth opening in 21% [1]. The Mallampati classification was not applicable in 43.86% of our patients. This result is higher than that of Leye P *et al*., who found 8.5% [1]. Patients were classified as ASA 1 in 75.44% of cases; our results are similar to those of Leye P *et al*., and by Binam F et al., who found a predominance of ASA 1 patients [1-5]. The most frequent surgical indications were osteosynthesis and tumor resection, with respective frequencies of 40.35% (n=23) and 38.60% (n=22). Owono Etoundi P *et al*., reported 59.34% and 42.76% of cases, respectively [4]. This could be explained by the high frequency of road traffic accidents in our area. General anesthesia was the technique used for all our patients. This observation was also made by Leye P *et al*., and Owono Etoundi P *et al.,* [1-4]. Anesthetic induction was primarily performed intravenously with propofol as a hypnotic in 49.12% of cases. Our result is lower than that of Leye P *et al*., who reported propofol use in 85.9% of cases. Indeed, propofol provides better intubation conditions than thiopental, with easier laryngoscopy, better relaxation, and reduced sensitivity of the oropharyngeal region [1-5]. Fentanyl was the only opioid used in all our patients. Our result is almost identical to that of Assenouwe S *et al*., who reported 97% of cases [6]. Celocurine was the most frequently used neuromuscular blocking agent, in 85.96% of cases. Assenouwe S *et al*., reported the use of rocuronium in 50% of cases [6]. Orotracheal intubation was performed in 77.19% (n=44) of our patients. This intubation was difficult in 38.64% (n=17) of cases. Owono Etoundi P *et al*., Leye P *et al*., and Rosolonjatovo T *et al*., reported difficult intubation rates of 42.76%, 21%, and 60%, respectively [1-7]. This prevalence is explained by the specific nature of maxillofacial surgery. Nasotracheal intubation was performed in 22.81% (n=13) of our patients. Leye P *et al*., Rasolonjatovo T *et al*., Rakotonomenjanahary S et al. successfully performed nasotracheal intubation in 48.7%, 44% and 68% of cases respectively [1-8]. Nasotracheal intubation thus appears to be the preferred option in situations where endotracheal intubation is predicted to be difficult, especially in resource-constrained settings. Brivet F *et al*., also opted for nasotracheal intubation, particularly blind nasotracheal intubation, in patients difficult to intubate in 4.92% of cases [9]. Primary tracheostomy was performed in 5.26% (n=3) of our patients. Our result is higher than that of Leye P *et al*., who found 3.23% of cases and lower than those of Rosolonjatovo T *et al*., and Rakotonomenjanahary S et al. who reported 12.5% and 11% of cases respectively [1-8]. Tracheostomy remains the life-saving procedure when intubation is impossible. Tachycardia and hypotension were the most frequent intraoperative cardiovascular incidents, occurring in 33.33% (n=19) and 24.56% (n=14), respectively. Assenouwe S *et al*., reported low frequencies of 5.5% and 7.5%, respectively. Chaibou MS *et al*., reported bradycardia in 2.74% [6-10]. A resuscitated cardiorespiratory arrest was observed in 1.75% of cases. Our result is comparable to that of Owono Etoundi P *et al.,* who found a cardiorespiratory arrest rate of 1.64%

[4]. In the immediate postoperative period, desaturation was the most significant incident. This finding was also reported by Samaké B *et al*., [11]. Seven point zero two (7.02%) of our patients were transferred to intensive care. Assenouwe *et al*., had reported a frequency of 3.5% [6]. The outcome during the first seven postoperative days was marked by two deaths, representing a mortality rate of 3.51%; this is above the average mortality rate in Niger (1%). Chaibou MS *et al.,* reported a mortality rate of 0.99%. In contrast, Leye *et al*., and Assenouwe *et al*., reported no deaths [1-12]. This result could be explained by the fact that our patients were followed up for up to seven postoperative days.

CONCLUSION

Anesthesia in maxillofacial surgery primarily presents the challenge of maintaining airway patency. Difficult intubation and the management of complications related to challenging tracheal intubation pose a significant challenge for practitioners. More modern and appropriate resources should be made available to reduce morbidity.

Conflicts of Interest: None

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