

Original Research

Assessment of efficacy of cocaine and tetracaine plus adrenaline for patients undergoing septoplasty

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ABSTRACT:

Background: Local anaesthesia continues to be used in many cases of septal and nasal reconstruction surgery. The present study was conducted to evaluate the efficacy of cocaine tetracaine plus adrenaline for patients undergoing septoplasty.

Materials & Methods: 60 patients undergoing septoplasty of both genders were divided into 2 groups of 30 each. Group I was in which 5 ml of cocaine 4 per cent solution (200 mg) was used and in group B, in which 5 ml of tetracaine 2 per cent solution plus adrenaline was used.

VAS and complications occurring during the procedure were recorded. **Results:** Group I had 20 males and 10 females and group II had 14 males and 16 females. The mean VAS score in group I was 6.2 and in group II was 4.1. The difference was significant ($P < 0.05$). Adverse events recorded were CNS restlessness in 4 in group I and 2 in group II, bradycardia 2 in group I and 1 in group II and tachycardia 1 in group I. The difference was significant ($P < 0.05$). **Conclusion:** Tetracycline found to be better as compared to cocaine in terms of less pain score and adverse events.

Key words: Local anaesthesia, Tetracycline, pain score

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INTRODUCTION

Local anaesthesia continues to be used in many cases of septal and nasal reconstruction surgery. Advantages of local anaesthesia are the freeing of operative room from the apparatus necessary for general anaesthesia, and a decreased bleeding, making tissues easier to handle.^{1,2} Selecting a successful local anaesthetic for nasal surgery is of particular importance for patient comfort, bleeding reduction and procedural safety.³ The use of cocaine as a local anaesthetic was introduced into clinical practice by Koller in 1884. Cocaine's unique attributes as a local anaesthetic and local vasoconstrictor, in conjunction with its rapid onset and extended duration of action, have led to its wide use in contemporary nasal surgery, despite its toxic side effects.⁴

Tetracaine was a commonly used topical anaesthetic in the past. It is a very potent and effective local anaesthetic, especially in structures deeper than the superficial mucous membrane, providing long duration anaesthesia. The combination of tetracaine

with adrenaline (ADR) could be a sufficient mixture for local anaesthesia and vasoconstriction.⁵

Tetracaine is an extremely powerful and effective local anaesthetic with a long duration of action; in a commixture with a vasoconstrictor such as adrenaline, it could provide ideal surgical conditions.⁶ The present study was conducted to evaluate the efficacy of cocaine tetracaine plus adrenaline for patients undergoing septoplasty.

MATERIALS & METHODS

The present study comprised of 60 patients undergoing septoplasty of both genders. All gave their written consent for the participation in the study. Inclusion criteria was patients with deviation of the nasal septum. Exclusion criteria was pregnancy or breast-feeding or not willing to participate in the study.

Data such as name, age, gender etc. was recorded. A thorough examination of nasal cavity was carried by ENT surgeon. Patients were divided into 2 groups of 30 each. Group I was in which 5 ml of cocaine 4 per

cent solution (200 mg) was used and in group B, in which 5 ml of tetracaine 2 per cent solution plus adrenaline was used. Patients' heart rate, arterial pressure and oxygen saturation were closely monitored at all times.

The total duration and complications occurring during the procedure were recorded. The intensity of the pain was recorded using a visual analogue scale of 0 –10, where 0=no pain and 10=intolerable pain. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I: Distribution of patients

| Groups | Group I | Group II |
|--------|--------------------------------------|--|
| Method | 5 ml of cocaine 4% solution (200 mg) | 5 ml of tetracaine 2% solution plus adrenaline |
| M:F | 20:10 | 14:16 |

Table I shows that group I had 20 males and 10 females and group II had 14 males and 16 females.

Table II: Assessment of pain

| Groups | Mean | P value |
|----------|------|---------|
| Group I | 6.2 | 0.05 |
| Group II | 4.1 | |

Table II, graph I shows that mean VAS score in group I was 6.2 and in group II was 4.1. The difference was significant (P< 0.05).

Graph I: Assessment of pain

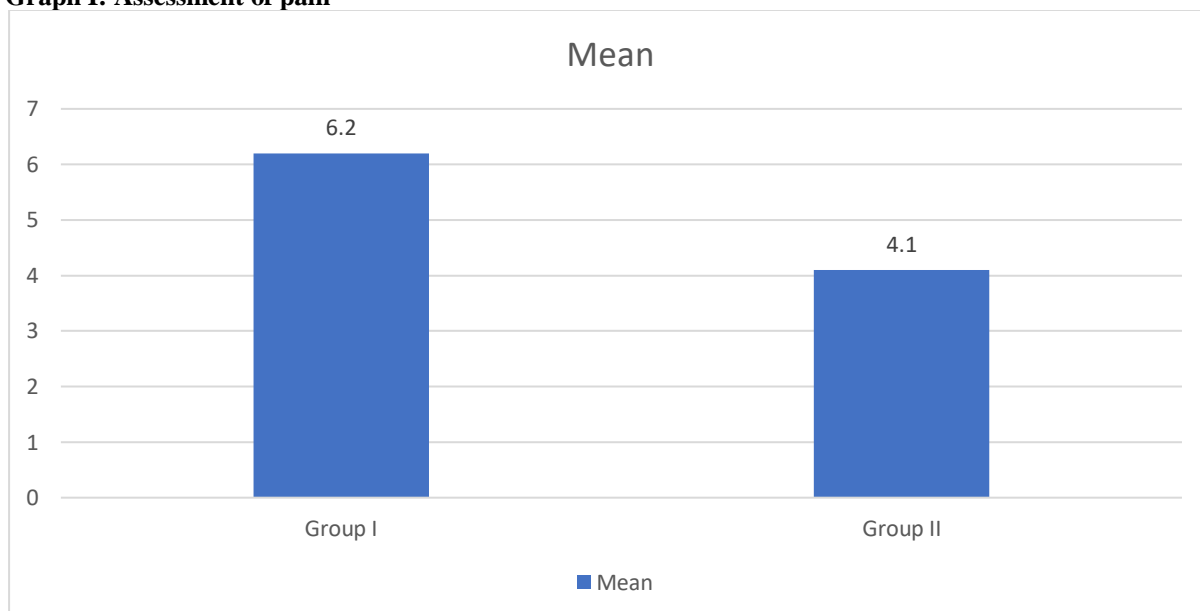
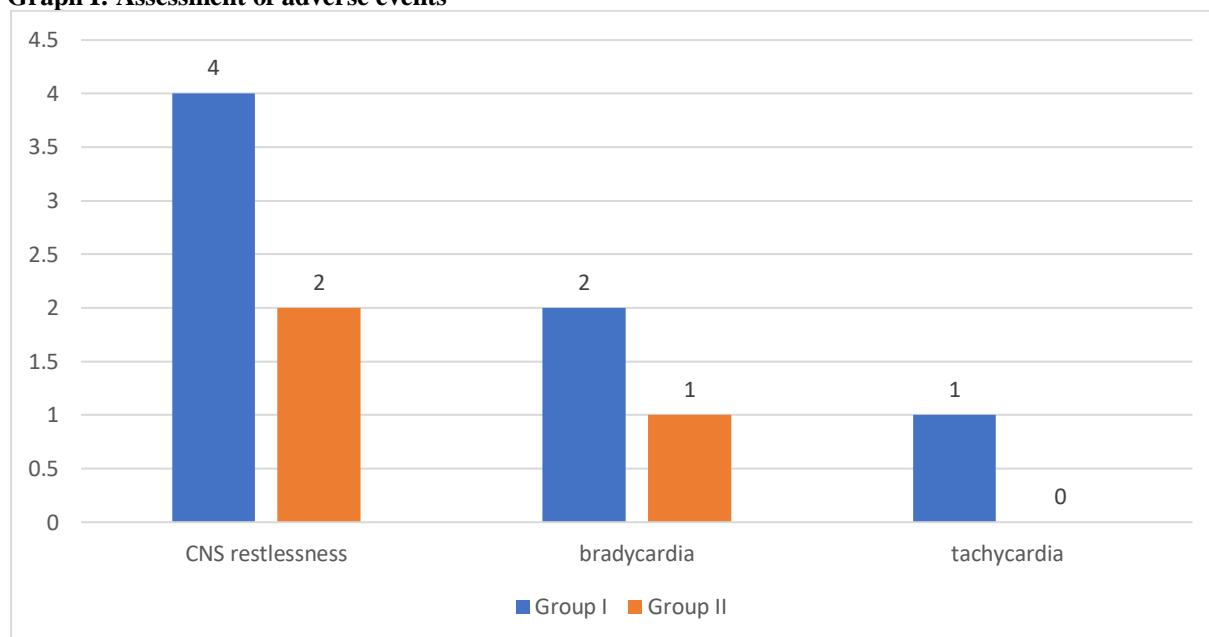


Table III: Assessment of adverse events

| Adverse events | Group I | Group II | P value |
|------------------|---------|----------|---------|
| CNS restlessness | 4 | 2 | 0.03 |
| bradycardia | 2 | 1 | 0.05 |
| tachycardia | 1 | 0 | 0.17 |

Table III, graph II shows that adverse events recorded were CNS restlessness in 4 in group I and 2 in group II, bradycardia 2 in group I and 1 in group II and tachycardia 1 in group I. The difference was significant (P< 0.05).

Graph I: Assessment of adverse events

DISCUSSION

Cocaine has been used for many years as a local anaesthetic for endonasal operations. However, the clinical use of cocaine in otolaryngology has decreased significantly over the past 25 years.⁷ This decline may be due to cocaine's potential toxicity and problematic storage and dispensing to the increased availability of safer alternative medications, or to a combination of all these factors. Tetracaine is most commonly used for spinal anaesthesia, but is also suitable for infiltration, peripheral nerve block, and topical anaesthesia on accessible mucous membranes.⁸ The present study was conducted to evaluate the efficacy of cocaine tetracaine plus adrenaline for patients undergoing septoplasty.

We found that group I had 20 males and 10 females and group II had 14 males and 16 females. The mean VAS score in group I was 6.2 and in group II was 4.1. Drivas et al⁹ evaluated the efficacy of cocaine 4 per cent solution, compared with tetracaine 2 per cent plus adrenaline, as a local anaesthetic for patients undergoing septoplasty. Patients were randomly classified into group A and group B, in which was used respectively cocaine 4 per cent solution and tetracaine 2 per cent solution plus adrenaline. A visual analogue scale was used to evaluate the severity of patients' pain during their procedure. Group B reported significantly less pain compared with group A.

We found that adverse events recorded were CNS restlessness in 4 in group I and 2 in group II, bradycardia 2 in group I and 1 in group II and tachycardia 1 in group I. Bizakis et al¹⁰ evaluated the efficacy of cocaine flakes compared to tetracaine with adrenaline solution, as a local anaesthetic for patients undergoing septoplasty. Patients were randomly classified in group A and group B, where cocaine and

the solution of tetracaine/adrenaline were used respectively. A visual analogue scale was used to evaluate the severity of the patients' pain during the procedure. The patients of group B showed a statistically significant lower pain score than patients of group A. They believed that the solution of tetracaine/adrenaline is an effective and safe anaesthetic for patients undergoing septoplasty under local anaesthesia.

In Adriani and Campell's report,¹¹ the use of tetracaine as a local anaesthetic was not recommended due to fatalities following the use of local mucosal anaesthetics, the majority of which involved tetracaine. However, in the majority of cases in which undesirable reactions were reported, the dose administered to the patient had exceeded the recommended maximum dose of 100 mg.

Noorily et al¹² assessed the quality of nasal anesthesia obtained with two local anesthetic solutions (2% lidocaine in oxymetazoline and 1% tetracaine in oxymetazoline). Measurements of anesthetic effect (sensation threshold and pain perception) were made with Semmes-Weinstein monofilaments. Measurements were performed before local anesthetic application and at 10 and 70 minutes after local anesthetic application. Subjects had greater increases in sensation threshold with tetracaine than with lidocaine at both 10 and 70 minutes. Subjects had greater decreases in pain perception with tetracaine than with lidocaine at both time intervals. Tetracaine mixed with oxymetazoline appears to be a superior topical anesthetic for nasal procedures.

The limitation the study is small sample size.

CONCLUSION

Authors found that tetracycline found to be better as compared to cocaine in terms of less pain score and adverse events.

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