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EFFECTIVENESS OF GOW-GATES AND INFERIOR ALVEOLAR NERVE BLOCKS IN INDUCING ANAESTHESIA IN PATIENTS UNDERGOING FULL MOUTH REHABILITATION

RupawatDivya Kamlesh[1], Dhanraj Ganapathy[2], Sanjana Devi N[3], Minal Gopal Tulsani[4]

[1]Postgraduate Student,Department of Prosthodontics,Saveetha Dental College and Hospitals, Saveetha Institute of Medical And Technical Sciences,SaveethaUniversity,Chennai, India.

[2]Professor&HeadDepartment of Prosthodontics,Saveetha Dental College and Hospitals,Saveetha Institute of Medical And Technical Sciences,SaveethaUniversity,Chennai, India.

[3]Postgraduate StudentDepartment of Prosthodontics,Saveetha Dental College and Hospitals,Saveetha Institute of Medical And Technical Sciences,SaveethaUniversity,Chennai, India.

[4]Postgraduate Student,Department of Prosthodontics,Saveetha Dental College and Hospitals,Saveetha Institute of Medical And Technical Sciences,SaveethaUniversity,Chennai, India.

[1]rupawatdivya@gmail.com,[2]dhanrajmganapathy@yahoo.co.in, [3]nsanju15@gmail.com, [4]minaltulsani23@gmail.com

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ABSTRACT

Tooth preparation involves aggressive removal of enamel and dentin. The pressure applied during tooth preparation and the thermal trauma induced can stimulate the free nerve endings

in the dentino enamel junction and can transmit pain subsequently. The purpose of this study is to evaluate the efficacy of anaesthesia between Inferior alveolar nerve block and Gow-Gates mandibular block nerve blocks. To evaluate effectiveness of Gow gates and inferior alveolar nerve blocks in inducing anaesthesia in patients undergoing full mouth rehabilitation. 50 patients undergoing fmr treatment were selected based on the inclusion and exclusion criteria.The effectiveness of IANB and GGMB nerve blocks were evaluated by the parameters of pain (vas scale) , discomfort (vas scale) and response to electric pulp tester. The discomfort and pain levels were slightly higher with IANB block and the response to pulp tester was more with GGMB block. The p values were not significant. The results showed that there is no significant difference in anaesthesia obtained by IANB and GGMB nerve blocks.

INTRODUCTION

The inferior alveolar nerve block is the most frequently used injection technique for achieving local anesthesia for mandibular restorative and surgical procedures. It involves the insertion of a needle near the mandibular foramen in order to deposit a solution of local anesthetic near to the nerve before it enters the foramen. Here the inferior alveolar vein and artery are also present (1).However, the inferior alveolar nerve block does not always result in successful pulpal anesthesia (2) . Failure rates of 10%–39% have been reported in experimental studies (2). The pterygoid plexus is located posterior and superior to this area. Many techniques and associated modification have been published regarding this nerve block and failure of anesthesia has been reported to be mainly due to technical errors in the local anesthetic administration technique by the dentist/surgeon and not because of the anatomical variations that may be present in some patients (3). Some operators may fail to identify the anatomical landmarks useful in applying the inferior alveolar nerve block and rely instead on assumptions as to where the needle should be positioned (4).

There are various studies that have compared the efficacy of conventional mandibular inferior alveolar nerve block (IANB) and Gow-Gates mandibular block (GGMB). GGMB was superior to IANB when used for man-dibular block according to some authors (5). Many factors favour the use of GGMB technique like only one injection is required (6), a higher success rate is achieved; there is a minimal positive aspira-tion rate (7); few post-injection complications are seen (8). Other factors include it provides successful anesthesia when a bifid inferior alveolar nerve and a bifid mandibu-lar canal are present; less painful sensation is reported with needle penetration; and there is a constancy of landmarks (9). However, others have found no significant differences between the two techniques. Many previous studies of these mandibular block techniques used a small sample size and lacked an objective analysis. Quite often, subjective questionnaires were used as the only method of assessment (10). In addition, the grade of anesthesia in previous studies was usually based on subjective responses of operators and patients, which is an inherently unreliable method of assessment. In order to determine if a difference exists between the two mandibular block techniques, we used an objective, standardized protocol for evaluation, in which response to anesthesia was measured with an electric pulp tester for pulpal anesthesia (11). Questionnaires for both patients and operators were also used to evaluate their

satisfaction with the anesthetic procedures and to note possible complications when a patient returned for removal of stitches.
Tooth preparation involves aggressive removal of enamel and dentin (12). The pressure applied during tooth preparation and the thermal trauma induced can stimulate the free nerve endings in the dentino enamel junction and can transmit pain subsequently (13). The pain transmission additionally can induce severe pain by stimulating the nerve terminals in there pulp complex .Hence the role of anaesthesia is mandatory in controlling this pain to enhance better treatment. IANB is the most frequent technique used in securing mandibular anaesthesia and also prone for failure (14). Hence under such circumstances gow gates block is a potent technique to address this and hence this study was initiated.

MATERIALS AND METHODS

The present study was presented before the institutional ethical and scientific review board and permission was obtained. The study protocol conformed to the ethical guidelines prescribed by the WHO and Helsinki declaration.
Study type: The present study is an invivo interventional trial involving human subjects.
Study design: Randomised control trial with split mouth group design.
Study setting was in Saveetha dental college.
Selection of subjects: 50 patients who underwent full mouth rehabilitation satisfying the following inclusion and exclusion criteria were randomly allocated to two groups, A and B respectively.
Inclusion criteria:
1. Patients undergoing tooth preparation in the mandibular arch bilaterally
2. Age group - 20 to 40
3. Both genders
4. Vital abutments

Exclusion criteria:
1. Patients with known allergy to local anaesthetics
2. Patients with limited mouth opening pts with tmd problems
3. Patients with endodontically treated abutments
4. Patients with periodontally compromised abutments

Informed consent: The selected subjects were clearly explained about the study protocols and informed consent was obtained from them for participation.

Random allocation: The selected subjects were randomly allocated into 2 groups A and B respectively using the coin flip method. Patients in Group A received IANB first on the side chosen by coin flip method followed by administration of gow gates block on the other side and group B the vice versa.

Outcome measures: Pain, sensitivity, discomfort, duration of anaesthesia, anaesthetic recovery and response to electric pulp tester .

A single blinding of the evaluator observing the outcome measures.

RESULTS

	GROUP 1 - IANB	GROUP 2 - GGMB	p value
Pain	**1.91 ± 0.99**	**2.26 ±1.25**	**0.386**
Discomfort	**2.08 ± 1.04**	**1.95 ± 0.97**	**0.676**
Response to electric pulp tester	**1.56 ±.50**	**1.56 ± 0.50**	**1.000**
Duration of anaesthesia	**85.0 ± 27.49**	**104.39 ± 38.48**	**0.081**

The mean value of pain on the vas scale for the IANB block was 1.2+1.6 and that for the GGMB block was 0.8+0.89. The p value for pain parameter was 0.460 hence it was insignificant.
The mean value of discomfort on the vas scale for IANB was 0.8+0.89 and that for GGMB was 1+0.63. The values are statistically insignificant with a p value of 0.461.
12 patients responded to the electric pulp tester after the IANB block whereas 11 responded positively for the GGMBblock.The p values calculated were insignificant.

DISCUSSION

When comparing success rates of mandibular anaesthesia, some investigators attributed the in-creased success rates of GGMB to the constancy of landmarks used to guide the placement of the needle(15). They believed that variations in the location of the mandibular foramen and lingula were the main reasons for the failure of anesthesia using the IANB method,and that GGMB is an alternative technique that avoids these problems,and which can achieve successful mandibular anaesthesia(16).

In this study it was found that there is statistically insignificant difference in the anaesthesia obtained from ianb and ggmb nerve blocks as compared by the VAS (visual analog scale)(17). However some authors reported that the GGMB block was more effective than ianb block for mandibular nerve block (18). GGMB has a single site for penetration hence less discomfort for the patient. In this study it was found that patients having discomfort with ianb was slightly more than ggmb block.

The response on electric pulp tester for slightly more on achieving ianb block than on receiving ggmb block. In a study done to compare anaesthesia by ianb and ggmb for extraction of third molars similar results were obtained(19,20).

Complications resulting from IANB include trismus, hematoma, transient facial paralysis,blanching of the tissue, burning sensation on im-pingement of the nerve, syncope, temporary uni-ocular blindness, and ophthalmoplegia(21). Incontrast, complications associated with GGMB are rarely reported, although hematoma, trismus,and temporary paralysis of cranial nerves III, IV and VI have been mentioned(18)**.**

CONCLUSION

The data obtained from this study shows that there is no significant difference for anaesthesia in fmr patients by IANB and GGMB nerve blocks.

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