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A PROSPECTIVE COMPARATIVE ANALYSIS TO GOVERN THE SYNCOPE RISK IN A DENTAL CHAIR IN SUPINE POSITION WHILE GIVING LOCAL ANESTHESIA

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Abstract:

Aim: *This study was conducted to compare the frequency of syncope in supine or semi-supine position during local anesthesia in dental surgery.*

Material and method: *One thousand healthy patients presenting for tooth extraction at the Oral and Maxillofacial Surgery Department were selected for the study from February 2019 to February 2020. The patients were divided into two groups. In group A, injection of local anesthesia in the supine position, i.e. while the patient's head and heart were at the same level, in group B, local anesthesia was used in the semi-supine position.*

Results: *There were 1000 patients requiring tooth extraction under local anesthesia with an age range of 15-47years (Mean 28.31± 8.55 years). It was observed that 135 patients (27%) treated in the supine position had pre-syncope symptoms and 245 patients (49%) had pre-syncope symptoms in the semi-supine position. The difference was statistically significant (p <0.0001). No patients were lying supine in this study.*

Conclusion: *It was found that it was easy to prevent fainting if all patients were lying on their backs.*

Keywords: *Dental chair position, Vasodepressor syncope, complications, local anesthesia.*

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INTRODUCTION:

Fainting is a temporary, self-limiting loss of consciousness and postural tension that often causes a decrease due to temporary cerebral hypoperfusion. Fainting is the most common medical emergency that accounts for over 60% of all dental emergencies. Most often it occurs before, during or immediately after local anesthesia[1-5]. A predisposing factor for syncope may be psychogenicity (fear, anxiety, emotional stress, bad news, and sudden severe pain, vision of blood or teeth or surgical instruments such as local anesthetic injection) or a long upright posture, e.g. tooth chair, no meals, hunger due to diet, exhaustion, poor physical condition, crowded and humid environment, male, 16 to 35 years old. The most important factor in vaso-depressor syncope is the patient's position in the dental chair[6-7]. Local anesthesia is used for patients seeking dental treatment in a supine or semi-supine position (30 to 45 degrees). Although syncope usually develops in an upright position, it can even occur in a supine or seated position. Fainting can be easily prevented by eliminating predisposing factors, namely adequate room ventilation, room temperature control, snacks or light meals, proper placement and anxiety relief before visiting the dentist. In addition, leg tension, along with muscle tone, used as a simple physiological measurement at the beginning of prodromal symptoms, may delay or prevent vasovagal syncope.

Currently, around the world, patients are being treated supine or back, which minimizes the possibility of fainting in the dental chair. However, this is not always the case in a country where most patients are still being treated upright[8]. To the best of our knowledge, there are no data on the occurrence of syncope in a dental chair among patients seeking treatment at various dental hospitals or dental clinics in Pakistan.

METHOD:

One thousand healthy patients presenting for tooth extraction at the Oral and Maxillofacial Surgery Department were selected for the study for one year duration from February 2019 to February 2020. The study was conducted with the consent of the Ethics Committee and informed consent of all patients. After the interview, patients with systemic diseases such as hypertension, diabetes, heart problems and pregnancy were excluded from the study. Each patient was asked to eat a snack or a light meal if it was empty before surgery. Types of clothing, especially veils and ties, were observed. All patients' levels of anxiety were recorded using a 10-point scale of fear of surgery. A score of 1 means there is no fear of teeth; 5 moderate fear; and 10 extreme fears. Patients were divided into two groups. Group A patients received local anesthetic injection in supine position, i.e., while the patient's head and heart were at the same level, patients from Group B received local anesthesia in supine position (30 ° - 40 ° position).

RESULTS:

There were 399 men (39.9%) and 601 women (60.1%). All patients were healthy and their age ranged from 15 to 47 years, with an average age of 28.32 ± 8.55 (Table 1).

TABLE 1: DISTRIBUTION OF CASES ACCORDING TO AGE AND SEX

	Males n = 399		Females n = 601		Total n = 1000	
	No.	**Percent**	**No**	**Percent**	**No**	**Percent**
< 20	33	8.3	65	10.8	98	9.8
20 - 24	125	31.3	181	30.1	306	30.6
25 - 29	86	21.6	117	19.5	203	20.3
30 - 34	42	10.5	36	6.0	78	7.8
35 - 39	79	19.8	76	12.6	115	11.5
40 - 44	20	5.0	103	17.2	163	16.3
≥ 45	14	3.5	23	3.8	37	3.7
Mean ± SD	**28.21 ± 8.26**		**28.38 ± 8.73**		**28.31 ± 8.55**	

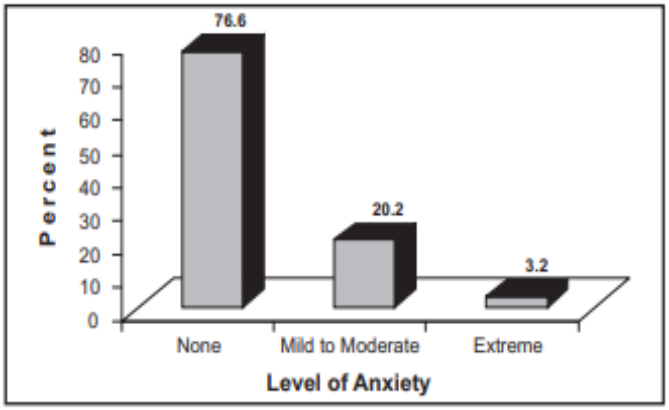

Fig 1: Level of Anxiety

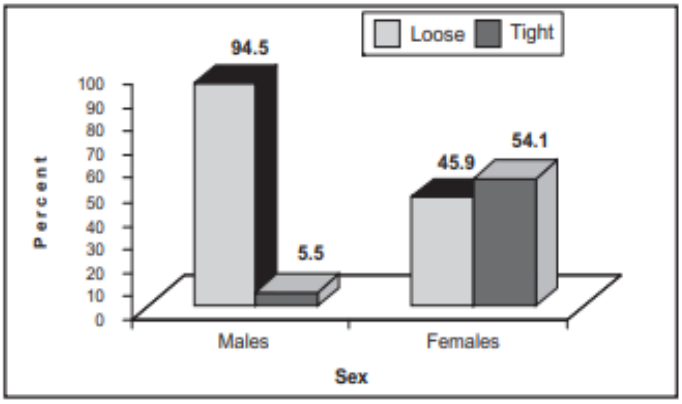

Fig 2: Type of clothing

Over three-quarters (76.6%) of patients scored 1 point on the 10-point fear scale, showing fearlessness, 20.2% received 3-6 points indicating fear, severity from mild to moderate, and 3.2% had 7- 10 points showing extreme fear (Fig. 1). While the majority of patients (65.3%) wore loose clothing, 34.7% wore tight clothing, including scarves, burqas or ties (Fig. 2). Among 500 patients in group A there were 189 men (37.8%) and 311 women (62.2%). These patients underwent local anesthesia in a supine position. Five hundred patients in group B had 210 men (42%) and 290 women (58%). Local anesthesia was performed supine (30 ° -45 °). While 31.2% of men and 24.4% of women suffered from dizziness in group A, 44.3% of men and 52.4% of women suffered from symptoms in group B (Table 2). The frequency of pre-syncope between both sexes was significantly higher in group B than in group A (P = 0.009 for men and P = 0.001 for women) (Table 2).

TABLE 2: COMPARISON OF SIGNS/SYMPTOMS OF SYNCOPE IN BOTH POSITIONS ACCORDING TO SEX

	Group A Supine Position		**Group B** Semi-SupinePosition		
	No	**%**	**No**	**%**	
Males	189		210		
None	130	68.8	117	55.7	P = 0.022
Light Headedness	59	31.2	93	44.3	P = 0.009
Females	311		290		
None	235	75.6	138	47.6	P < 0.0001
Light Headedness	76	24.4	152	52.4	P < 0.0001

All patients with pre-syncope symptoms were immediately placed in a supine position, but those who were in a supine position and remained in this way, the clothes loosened and were asked to take deep breaths, cross legs and muscle tension. All patients recovered completely within 2-3 minutes. No patient lost consciousness after lying on their backs.

DISCUSSION:

Fainting is a mild and self-limiting process that heals spontaneously without therapeutic intervention. Loss of postural tension and final dropping is a natural protective mechanism that restores intermittent brain perfusion. In the absence of this mechanism, death may occur, as observed in people forced to remain upright during the crucifixion[9]. Hass from the Toronto University, Canada, noted that emergencies are more likely during and after local anesthesia during tooth extraction or endodontics, and sixty percent of these emergencies are syncope. Studies in the United States and Canada have also shown that syncope is the most common medical emergency observed by dentists. Fainting accounts for about 50% of all emergencies reported in the dentist's office. Muller et al. In Germany, in January 2005, 2,998 dentists from the Saxon State of the Dental Council were examined to find the most common medical emergencies in dentistry[10]. Vasovagal syncope was the most common emergency (1238 cases) 20 Girdler et al. Most commonly reported sudden vasovagal syncope (1.9 cases per dentist per year) followed by hypoglycaemia (0.17), angina pectoris (0.17), epileptic seizure (0.13), suffocation (0.09), and asthma (0.06), hypertensive crisis (0.023) and anaphylaxis (0.013). The most important factor in vasodepressant syncope is the patient's position in the dental chair[11]. Local anesthesia is used for patients seeking dental treatment in a supine or semi-supine position (30 to 45 degrees). Although syncope usually develops in an upright position, it can even occur in a supine or seated position. In our study, we found symptoms before fainting in 380 patients (38.0%), 228 women (22.8%) and 152 men (15.2%). The patient is more sensitive to fainting than the patient[12]. This finding contradicts the common view that men are more likely to experience fainting than women. This may be due to the fact that in our study 54.1% of patients wore tight clothing, which is a risk factor for fainting[13].

A local anesthetic injection in the supine position minimizes the risk of fainting in the chair. In the lying position, the gravitational force is distributed evenly throughout the body, and blood flows more easily from the heart to the brain. In supine position, systolic blood pressure drops by 2 mmHg for every inch of the patient's head above heart level. Graham et al. While 31.2% of 32 patients fainted by donating blood lying down on their backs, 43.7% of 16 patients fainted while the usual fishing line passed in the correct sitting position[14]. We were unable to find the patient after changing position to supine or supine. Pre-syncope symptoms in the supine position were 135 patients (27%) and semisupine 245 patients (49%). Gatchel et al. At the Department of Psychology at the University of Texas, Dallas evaluated the occurrence of fear and avoidance of teeth in the general adult population. While 11.7% of the population had a high dental anxiety and 17.5% with a medium dental anxiety, the remaining 71% did not feel anxiety. Similar results were obtained in 76.6% of our study, because there was fear of teeth extraction, 20.2% had mild to moderate anxiety, and 3.2% had fear of teeth. Fear and anxiety are prone to the psychological factors of fainting, but we have not found any patients undergoing local anesthesia in the supine position[15].

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