Early Post-Percutaneous Coronary Stent Intervention Period: Is The Tooth Extraction Safe?

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Abstract:
Objectives: Several risk factors can affect the cardiovascular outcome resulted from minor dental surgical procedures in patients received Percutaneous Coronary Stent Intervention especially in the early postoperative phase. So, the aim of this study was directed to evaluate the cardiovascular changes and post-operative bleeding occurred during the early post- PCI period (early six months) for patients subjected to tooth extraction and received L.A drug with or without vasoconstrictors in the presence or absence of preoperative sedation.
Patients & Methods: Fourty four patients included within this study were subjected to tooth extraction during the early 6 months following percutaneous coronary stent intervention (PCI). Patients were divided equally into four groups. In 1st group, patients received L.A with vasoconstrictor under preoperative sedation. While, 2nd group was similar but without the presence of preoperative sedation. In 3rd group, patients received L.A without vasoconstrictor under the presence of preoperative sedation. The 4th group was similar to 3rd group but without the presence of preoperative sedation. Systolic, diastolic blood pressure, heart rate and ST segment deviation were recorded for patient assessment.
Results: No significant difference between the 1st and 4th group regarding to Mean Bp (P=0.130), Mean HR (P=0.080)and Mean ST segment deviation(P=0.205)and Sys Bp.(P=0.417). A significant difference between the 2nd group and 3rd group regarding to Sys. BP. (P=0.000) Diastolic Bp (P=0.004), Mean HR (P=0.000) and Mean ST segment deviation (P=0.000)
Conclusion :Combined role of presence or absence of presedation and vasoconstrictor in PCI patients subjected to tooth extraction can play a dramatic effect on cardiovascular parameters rather than each of them separately for the same type of patients.

[Mohamed Zaghlool Amer, Maged Zaghlool Amer. **Early Post-Percutaneous Coronary Stent Intervention Period: Is The Tooth Extraction Safe?.** Journal of American Science 2011; 7(3): 804-811]. (ISSN: 1545-1003). http://www.americanscience.org.

1. Introduction:

The reported incidence of cardiovascular disease (CVD) among dental patients is 15%. [1] In general, elective dental treatment has traditionally been contraindicated, except for conservative emergency procedures, in patients with unstable angina pectoris (UAP) and within 6 months after onset in patients who have experienced acute myocardial infarction (AMI).[2] Such relative contraindication was attributed to the presence of vasocontrictors which is considered as one of the most essential prerequisite to success in dentistry through achieving good-quality local anesthesia (LA). [3] However, vasoconstrictors have several physiological responses including changes in heart rate and blood pressure. [4] These changes are regulated by the net balance between sympathetic and parasympathetic activity, and both stress and pain will further modify autonomic response. [5]

On the other hand, all physiological responses toward vasoconstrictors beside patients stress can share as a risk factors in aggravating the complications that might be resulted especially for patients received percutaneous coronary stent intervention. Stent thrombosis in percutaneous coronary stent intervention (PCI) are most commonly occurs in the first month after stent implantation, and in this interval, it is referred to as “subacute stent thrombosis.” However, numerous cases of “late” stent thrombosis, particularly in patients who have been treated with DES, have been described as occurring months or even years after stent implantation. [6]

In the majority of cases, stent thrombosis is a catastrophic event, resulting in life-threatening complications. Spertus et al., declared that mortality rates due to presumed or documented stent thrombosis range from 20% to 45%.[6] In the current

era of dual antiplatelet therapy, the average reported occurrence of subacute stent thrombosis is 1%.[7]

However, recommendations for use of epinephrine in clinical dental practice are not in full agreement, because of the unwanted side effects.[8] Opinion about the use of epinephrine in patients with cardiovascular diseases and hypertension is also divided. To avoid adverse cardiovascular effects, especially in high-risk patients, some authors have recommended the use of epinephrine free anesthetics.[9] On the other hand, inadequate anesthesia results in stressful pain for the patient, whose body then releases greater amounts of endogenous catecholamine than that used in dental anesthesia.[10]

So, the aim of this study was directed to evaluate the cardiovascular changes and postoperative bleeding occurred during the early post-PCI period (early six months) for patients subjected to tooth extraction and received local anesthesia drug with or without vasoconstrictors in the presence or absence of preoperative sedation.

2. Patients & Methods:

Fourty four patients were included within this study received Bare Metal Stent (Liberte monorail coronary stent system Boston scientific)who required single tooth extraction under local anesthesia; they were selected from out patient clinic, Cardiology Department, Faculty of Medicine, Mansoura University .

All patients included within this study were subjected to tooth extraction during the early 6 months following percutaneous coronary stent intervention (PCI) under coverage of adenosine diphosphate P2Y12 receptor antagonist clopidogrel 75mg (Plavix, Sanofi Aventis) combined with 100mg aspirin (Bayer, Leverkusen) to minimize the risk of thrombotic PCI formation. Patients were divided equally into four groups. The 1st group consisted of eleven patients received local anesthesia with vasoconstrictor (Mepivacaine HCl 2% with Levonordefrin 1:20.000. Alexandria Co. for Pharmaceuticals and Chemical Ind. Alexandria. Egypt) and subjected to dental extraction under preoperative sedation (one hour before starting procedures) using 3mg bromazepam (Calmepam, Glaxo Smithkline, S.A.E, El Salam city, Cairo, A.R.E). The 2nd group consisted of eleven patients received local anesthesia with vasoconstrictor and subjected to dental extraction without the presence of preoperative sedation. The 3rd group consisted of eleven patients received local anesthesia without vasoconstrictor and subjected to dental extraction with the presence of preoperative sedation.

The 4th group consisted of eleven patients received local anesthesia without vasoconstrictor and subjected to dental extraction without the presence of preoperative sedation.

Most patients were given nitrates, angiotensin-converting enzyme inhibitors, calcium antagonists,and/or beta blockers. The patients were scheduled for single tooth extraction. After dental treatment, each patient was carefully observed for vital signs. For postoperative dental pain control, Diclofenac Potassium(Oflam, Mepha Pharma Egypt S.A.E) 50mg tablets was prescribed.

Inclusion & Exclusion Criteria

Inclusion criteria were the following: (1) controlled hypertension (HTN) with blood pressure not exceeding values of 160/100 mm Hg.

Exclusion criteria were the following: (1) cardiovascular instability including unstable angina pectoris, refractory dysrrhythmias, untreated or uncontrolled hypertension, untreated or uncontrolled CHF, uncontrolled hyperthyroidism; (2) uncontrolled diabetes mellitus; (3) sulfite sensitivity; (4) steroid dependent asthma; (5) pheochromacytoma; (6) tricyclic antidepressant treatment; and (7) history of psychiatric illness, chronic use of central nervous system depressants or antidepressants or mental instability.

Furthermore, the exclusion criteria included patients with anaemia, liver disease or any medical condition which might affect the coagulation process and subjects with a history of bleeding episodes or epistaxis.

Treatment protocol

The study time frame for each patient included a baseline period extended from beginning of monitoring 5minutes before administration of local anasethesia and extrended for 30 minutes after completion of tooth extraction. Anesthesia was induced carefully with aspiration and slow injection to prevent injection of the anesthetic drug into the vasculature and care was taken to inject as painlessly as possible. A standard dose 1.8 mL (Mepivacaine HCl 2%, Alexandria Co. for Pharmaceuticals and Chemical Ind. Alexandria. Egypt)) was injected in all patients. A minimum of 5 minutes was allowed to attain LA effectiveness. [11]

Cardiac Monitoring

A noninvasive E.C.G recorder (SCHILLER MT 200 Holter ECG version 2.04) was used to record all cardiovascular parameters which were used for patients assessment at standard time points and time intervals. Then the mean of recorded data at these time intervals for every parameter of each patient was calculated. Standard time points and time intervals were defined: (1) Baseline: beginning of

monitoring; (2) Baseline_5 minutes: end of stabilization period; (3) LA: injection timing; (4) LA_5 minutes: 5 minutes after the injection; (5) Treatment: beginning of dental treatment; (6) End: completion of dental treatment; (7) Rest: end of the rest period following the completion of the dental treatment (after 30minutes from completion of tooth extraction) (8) _ (LA_5)-LA: ECG changes occurring in the interval between the time of LA and 4 minutes later (this time period presents changes that may be attributed to the LA); (9) _ (Treatment_4)-LA: ECG changes occurring in the interval between the time of LA and 5 minutes after the beginning of the dental treatment (this time period presents changes that may be attributed to the initiation of the treatment and to a lesser extent late effects of the LA solution). [11]

For all patients included within this study a strict cardiac monitoring at the different nine time intervals extending from the beginning of monitoring till 30 minutes from completion of tooth extraction. During this standardized time intervals systolic and diastolic blood pressure (Sys.BP and Dia.BP, respectively), heart rate (HR) and ST segment deviation (_2 mm) or T-wave inversion were recorded for each patient.

Assessment of postoperative bleeding

The patients were then asked to apply pressure on a piece of sterile gauze for 30 minutes and were then re-evaluated for bleeding. If the subjects did not have any signs of bleeding at that time, they were discharged and contacted by phone 12 h, 24 h, 48 h and 5 days post-operatively. If there was any bleeding, they were re-examined, new gauze was placed and re-evaluated after 30 min. Any active oozing from the socket after 30 min was considered immediate bleeding. If the patients reported during the phone communication that there was bleeding, they were instructed to return for further evaluation.[12]

Statistical analysis

Statistical analysis was done using computer software SPSS version 15. Data were expressed as mean ± standard deviation. The variables distribution was tested for normality assumption using Kolomogrov Smirnov test. One way analysis of variance was used to test for significant difference between groups examined. Bonferonni Post-Hoc test was used for comparison between groups.

3. Results:

During dental treatment, no patients complained of symptoms such as chest pain and dyspnea or showed marked hemodynamic change that necessitated discontinuation or postponement of the dental treatment. The patients ages ranged between 40y and 64 with a mean age 52.78. Among groups patients ages within 1st group ranged between 48 -59 with mean age 54.75, within the 2nd group ranged between 40-64 with mean age 54.45y, within 3rd group ranged between 42-55y with mean age 48.72y and within the 4th group 46-62y with mean age 53.19year.

The average interval between percutaneous coronary stent Intervention and dental treatment was 38.0 days. In the present study, 5 patients underwent single tooth extraction during the time period (17-30), 27 patients at time period (30-60), 9 patients at time period (61-89) and the remaining 3 patients at time period (90-180 days). All patients were kept on the combination between clopidogrel (Plavix) 75mg and 100 mg aspirin to allow metal stent struts to become adequately endothelialized to reduce the risk of stent thrombosis.

Table (1) Showing Mean, Standard Deviation, Standard Error, Minimum and Maximum recorded data among patients regarding to Systolic & Diastolic Blood Pressure

Dependant Variable	Systolic Blood Pressure						Diastolic Blood Pressure				
Patient Groups	N	Mean	±Std. Deviation	Std. Error	Minimum	Maximum	Mean	±Std. Deviation	Std. Error	Minimum	Maximum
G1	11	140.18	3.736	1.126	135.00	147.00	86.72	3.349	1.009	82.00	93.00
G2	11	158.09	3.910	1.179	152.00	165.00	93.36	5.239	1.579	85.00	100.00
G3	11	127.45	4.227	1.274	120.00	132.00	87.81	3.250	0.980	82.00	93.00
G4	11	138.72	4.692	1.414	129.00	145.00	90.59	4.969	1.498	83.50	98.50
Total	44	141.11	11.799	1.778	120.00	165.00	89.62	4.897	.738	82.00	100.00

Regarding to systolic blood pressure, the highest recorded value was presented in the 2nd group 165mmHg while the lowest recorded value was presented among patients within the 3rd group 120mmHg. The same findings were presented during assessment of diastolic blood pressure since the highest value 100 mmHg was recorded among patients within the 2nd group. However, the lowest value was recorded among patients within the 1st and 3rd group 82 mmHg.**(Table 1)**

Table (2) Showing Mean, Standard Deviation, Standard Error, Minimum and Maximum recorded data among patients regarding to Mean Blood Pressure & Pulse Pressure

Dependant Variable	Mean Blood Pressure						Pulse Pressure				
Patient Groups	N	Mean	±Std. Deviation	Std. Error	Minimum	Maximum	Mean	±Std. Deviation	Std. Error	Minimum	Maximum
G1	11	104.54	2.956	.891	100.67	109.67	53.45	3.908	1.178	49.00	63.00
G2	11	114.93	3.866	1.165	108.00	119.67	64.72	6.165	1.859	52.00	75.00
G3	11	101.03	2.272	0.685	98.33	105.67	39.63	5.937	1.790	30.00	50.00
G4	11	106.63	3.361	1.013	101.33	111.33	48.13	7.500	2.261	34.50	58.50
Total	44	106.78	6.009	0.905	98.33	119.67	51.48	10.87	1.639	30.00	75.00

Regarding to Mean blood pressure, the highest recorded value was presented in the 2nd group 119.67mmHg while the lowest recorded value was presented among patients within the 3rd group 98.33mmHg. The same findings were presented during assessment of pulse pressure since the highest value was 75 mmHg in the 2nd group. However, the lowest value was recorded among patients within the 3rd group 30 mmHg.**(Table 2)**

Table (3) Showing Mean, Standard Deviation, Standard Error, Minimum and Maximum recorded data among patients regarding to Mean Heart Rate & Mean ST Segment Deviation.

Dependant Variable	Mean Heart Rate						Mean ST Segment Deviation				
Patient Groups	N	Mean	±Std. Deviation	Std. Error	Minimum	Maximum	Mean	±Std. Deviation	Std. Error	Minimum	Maximum
G1	11	85.09	4.346	1.310	78.00	93.00	-0.5308	0.357	0.107	-1.26	-0.08
G2	11	111.18	3.572	1.077	103.00	115.00	-1.310	0.522	0.157	-2.07	-.51
G3	11	73.00	4.219	1.272	68.00	83.00	7.928E-02	0.487	0.147	-0.73	0.57
G4	11	88.27	4.429	1.335	81.00	95.00	-.291	0.349	0.105	-.80	0.52
Total	44	89.38	14.53	2.191	68.00	115.00	-0.552	0.631	9.519E-02	-2.07	0.57

During comparing 1st group versus 2nd group, a high statistical significant difference was recorded between both groups regarding to Sys. BP.(P=0.000), Mean Bp (P=0.000), Mean pulse pressure (P=0.000), Mean HR (P=0.000), Diastolic Bp (P=0.001) and Mean ST segment deviation (P=0.000)**(Table4,5)**

A high statistical significant difference was recorded between 3rd group versus 4th group regarding to Mean Sys. BP.(P=0.000)Mean Bp (P=0.000), Mean pulse pressure (P=0.002), Mean HR (P=0.000).**(Table 4,5)** However, no statistical significant difference between both groups regarding to mean Diastolic Bp (P=0.138) and Mean ST segment depression (P=0.261) **(Table 4,5)** revealing the significant effect of secreted endogenous catecholamine within the 4th group which may be expected to have an remarkable effect on the cardiovascular parameter when compared with 3rd group that was covered by presedation.

Table (4) Showing the level of significance when comparing different groups between each other regarding to Systolic and Diastolic blood pressure

Dependant variable	Systolic Blood Pressure				Diastolic Blood Pressure		
Patient Group	Patient Group	Mean Difference I-J	St. error	Sig	Mean Difference I-J	St. error	Sig
G1	G2	-17.9091(*)	1.7728	0.000	-6.6364(*)	1.8331	0.001
	G3	12.7273(*)	1.7728	0.000	-1.0909	1.8331	0.555
	G4	1.4545	1.7728	0.417	-3.8636(*)	1.8331	0.041
G2	G3	30.6364(*)	1.7728	0.000	5.5455(*)	1.8331	0.004
	G4	19.3636(*)	1.7728	0.000	2.7727	1.8331	0.138
G3	G4	-11.2727(*)	1.7728	0.000	-2.7727	1.8331	0.138

On the other hand, no statistical significant difference was recorded between 1st and 4th group regarding to Mean Bp (P=0.130), Mean HR (P=0.080)and Mean ST segment deviation (P=0.205)and Sys Bp.(P=0.417). However, there was low statistical significant difference between both groups regarding to Diastolic Bp (P=0.041) and Mean pulse pressure (P=0.045).**(Table4,5)**

A high statistical significant difference was recorded between 2nd and 3rd group regarding to Sys. BP.(P=0.000) Diastolic Bp (P=0.004), Mean HR (P=0.000) and Mean ST segment deviation (P=0.000)**(Table4,5)**

Regarding to Mean heart rate(HR), there was a highly statistical significant difference between 2nd and 3rd group (P=0.000) and all other groups (P=0.000). However, there was no statistical significant difference between 1st and 4th group (P=0.080).

Regarding to Mean Blood pressure, there was a highly statistical significant difference between 2nd and 3rd group (P=0.000) and all other groups (P=0.000). However, there was no statistical significant difference between 1st group and 4th group (P=0.130).

Table (5) Showing the level of significance when comparing different groups between each other regarding to Mean Heart rate & Mean ST Segment Deviation

Dependant variable	Mean Heart Rate				Mean ST Segment Deviation		
Patient Group	Patient Group	Mean Difference I-J	St. error	Sig	Mean Difference I-J	St. error	Sig
G1	G2	-26.0909(*)	1.7719	0.000	0.7794(*)	0.1860	0.000
	G3	12.0909(*)	1.7719	0.000	-.4515(*)	0.1860	0.020
	G4	-3.1818	1.7719	0.080	-.2394	0.1860	0.205
G2	G3	38.1818(*)	1.7719	0.000	-1.2309(*)	0.1860	0.000
	G4	22.9091(*)	1.7719	0.000	-1.0188(*)	0.1860	0.000
G3	G4	-15.2727	1.7719	0.000	0.2121	0.1860	0.261

Regarding to Mean ST segment Deviation there was a high statistical significant difference between 2nd group and all other groups(P=0.000). Also, there was a high statistical significant difference between 3rd group versus 1st group (P=0.020) and 2nd group (p=0.000) except 4th group (P=0.261) this may be attributed to positive effect of presedation measures in decreasing the liability of ST deviation especially when combined with absence of vasoconstrictor. **(Table. 5)**

Assessment of Postoperative Bleeding

In the 1st group, only one male patient out of eleven patients (9.09%) oozed blood within 12 hours post-operatively after initial controlling of post extraction bleeding within the early 30minutes. The patient was seen, re-evaluated and asked only to apply pressure over the gauze which controlled the bleeding. No further oozing of blood was recorded at the other time intervals of follow up either at 24 h and 48 h and 5 days post-operatively. Within, the 2nd group one male patient out of eleven patients (9.09%) revealed bleeding at 30 minutes of follow up. However, instructing the patient for extending the time of proper application of pressure pack for another 30min was able to stop bleeding and the patient revealed no further bleeding at the other time intervals of follow up either at 12h, 24 h and 48 h and 5 days post-operatively.

The 3rd group showed two patients one male and one female out of eleven patients(18.18%) suffered from postoperative blood oozing at 30min of follow up. The classical application of pressure pack was enough to control bleeding with the male patient during the next 30minutes and the other time intervals of follow up. However, the female patient who suffered from postoperative blood oozing was subjected to further using of pressure pack with adequate stabilization through application of eight figure suture of the extraction socket for proper assurance of bleeding control. In the 4th group no patient recorded any sign of postoperative bleeding either at the different time intervals of follow up either at 30min, 12h, 24 h and 48 h and 5 days post-operatively.

4. Discussion:

The recent trend in cardiac rehabilitation is toward aggressive early introduction of exercise instead of prolonged bed rest, which had resulted in physical and mental deconditioning. [13] As a result, early hospital discharge and return to normal community life has become main stream, and the safety of this approach has been well established. These facts demonstrate that even patients with AMI or UAP can tolerate considerable cardiovascular load. Consequently, such patients may safely undergo

minimally invasive dental treatment when appropriate precautions are taken.[14]

Furthermore, through the last 30-year interval since PCI has emerged as a safe, economic and less invasive alternative to surgery, and has changed the face and the delivery of cardiac care and offering patients a reasonable option to relieve cardiac symptoms, while minimizing procedural risks and facilitating a swift return to normal activities. [15]

On the other hand, dental treatment poses an additional risk in that treatment- related pain and stress increase the amount of catecholamine released in blood, which results in elevated heart rate and blood pressure; these in turn can reduce the oxygen demand-supply balance in the myocardium and induce myocardial ischemia. In addition, elevated blood catecholamine levels may induce platelet aggregation and coronary spasms, [13] which can lead to myocardial infarction. Blood pressure reduction due to neurogenic shock or syncope, often encountered during dental treatment, reduces coronary blood flow, which may induce thrombotic occlusion in stenotic portions. Dental treatment must therefore be carefully conducted under rigorous systemic management and with these risks in mind. [14]

A recent Science Advisory from the American Heart Association, American College of Cardiology, Society for Cardiovascular Angiography and Interventions, American College of Surgeons, and the American Dental Association recommended continuing aspirin and clopidogrel therapy for minor dental surgical procedures in patients who have coronary artery stents or delaying treatment until the prescribed antiplatelet regimen is completed, and warned of the significant thrombotic risks of discontinuing therapy. [16]

Such recommendation for the prevention of stent thrombosis after coronary stent implantation state that, at a minimum, patients should be treated with clopidogrel 75 mg and aspirin 325 mg for 1 month after bare-metal stent implantation, 3 months after sirolimus drug-eluting stent (DES) implantation, 6 months after paclitaxel DES implantation, and ideally, up to 12 months if they are not at high risk for bleeding. [17]

These recommendations were based on the antiplatelet regimen used in trials that were conducted to obtain US Food and Drug Administration approval (low-risk lesions in low-risk patients) and the anticipated time it takes for the metal stent struts to become adequately endothelialized to reduce the risk of stent thrombosis.[16]

As a result of all documented recommendation, all patients included in this study were monitored starting from the early preoperative phase and through the postoperative phase for careful assessment of the associated cardiovascular changes that might result from local anesthesia administration or patient stresses secondary to tooth extraction at a standard time points and time intervals for each patient included in the study then the average reading for each parameter for every patient included in this study was recorded as a proper method of assessment since all patients included in the study were subjected to the same surgical procedure carried out by the same operator under same type and dose of local anesthesia (only1.8ml within the patient tolerance level) and the only two variable that evaluated in this study were the role of VC and preoperative sedation on such risky PCI patients. Beside that, tooth extraction procedure is a collective situation that can not be separated during which such risky PCI patients must be subjected to both of risk factors either local anesthesia (with or without V.C) and extraction process (with its expected associated stress level).

On the other hand, monitoring of postoperative bleeding in this study which is considered also as another risk factor in PCI patients receiving both clopidogrel 75 mg and aspirin 100 mg as a prophylaxis from occurrence of thrombotic stent.

Our finding revealed that there was no significant difference between the 1st group in comparison with the 4th group regarding to the measured cardiovascular and heamodynamic parameters except diastolic blood pressure (P=0.041) and pulse pressure (P=0.045). These findings can be attributed to either the injected dose of V.C was within the cardiovascular tolerance level, beside the suppressive role of patient sedation resulted in decreasing of overall level of the endogenous catecholamine.

Our results were in accordance with, Cintron et al., [18] who investigated the effects of local anesthesia and some dental procedures in 40 patients with histories of myocardial infarction within 3 months previously; the investigators demonstrated the absence of significant hemodynamic change, suggesting good tolerance of dental procedures. Findler et al., [19] reported that no complications were caused by dental treatment in 26 patients with severe ischemic heart disease.

Niwa et al., [20] reported that lidocaine-epinephrine is safe in hemodynamic consequences in patients with cardiovascular diseases. They concluded that a low dose of epinephrine in local dental anesthesia was well tolerated by cardiovascular patients. Tolas et al., [21] reported no significant cardiovascular changes after injection of a single cartridge of an anesthetic containing epinephrine, although there was a slight increase in

plasma epinephrine level**.** Furthermore, authors revealed that local anesthesia have a limited cardiac side effects and within normal physiological variation.[11]

A high statistical significant difference between the 2nd group in comparison with the 3rd group regarding to the measured cardiovascular and heamodynamic parameters. Such finding can be explained by the simple fact revealed that patients within 2nd group can be considered as the highest risk group since they received vasoconstrictor beside endogenous catecholamine resulted from such stressful condition especially, in absence of any presedation in contrast to the 3rd group which might represent the lowest risk group.

This result was in agreement with Muller et al.,[22] who stated that the amount of catecholamine released in blood, which resulted from dental treatment can induce myocardial ischemia and aggravate platelet aggregation and coronary spasms.

Niwa et al.,[20] demonstrated significant cardiovascular changes 10 minutes after the injection of lidocaine 2% with a higher adrenalin concentration of 1:80,000. In this study, the concentration of Levonordefrin vasoconstrictor was 1:20000 that may explain our findings especially within these two groups.

Regarding to mean ST segment deviation, non of all patients included in this study showed an remarkable ischemic changes or ST segment deviation that might affect the continuation of tooth extraction. However, there was a high statistical significant difference between 2nd group and all other groups(P=0.000). Also, there was a high statistical significant difference between 3rd group and other groups except 4th group (P=0.261). On the other hand, no statistical significant difference between 1st and 4th group (P=0.205). Such inter-group variation of level of significance may be attributed to positive effect of presedation measures in decreasing the liability of their effect on ST segment deviation. Furthermore, it can help operators in directing them toward the way of minimally neutralizing the effect of these risk factors in those compromised PCI patients.

Our findings were in accordance with a study that was carried out on cardiovascular patients using two different types of local anasethesia and revealed a lack of clinical presentation of the ischemic changes indicateing that the risk for severe ischemic emergency is low. The ECG changes noted in this population do not represent a life-threatening condition. They mentioned that the dentist should be alert to these ischemic changes as the patient is at risk for ischemic deterioration, especially in extensive surgery. [11]

Regarding to assessment of post extraction bleeding, only four patients showed a relative bleeding within the 1st 24 hours and the operator was able to control bleeding by either simple and proper application of pressure pack or adequate stabilization of pack with eight figure suture even without application of any local hemostatic material. Such finding was in accordance with an abstract presented at the American Academy of Oral Medicine meeting in 2006, [23] that reported the results regarding 36 patients randomized to 325 mg aspirin or placebo 2 days before and 2 days after a single tooth extraction. There were no differences in any bleeding outcomes between the 2 treatment groups. This appears to be the first randomized, double-blind, placebo-controlled trial evaluating the impact of aspirin on bleeding complications from invasive dental procedures.

Yokoyama et al., [24] have shown that a low dose of ASA has an effect on bleeding time. However, others have shown that there were no effects on bleeding after extraction of teeth.[25] In accordance with this finding, a minimal aspirin dose was used to minimize the risk of both post-operative bleeding and prevent stent thrombosis.

5. Conclusion:

Combined role of presence or absence of presedation and vasoconstrictor in PCI patients subjected to tooth extraction can play a dramatic effect on cardiovascular parameters rather than each of them for the same type of patients.

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3/13/2011