Can Clonidine as a Pre-Anaesthetic Drug Decrease Bleeding During Rhinoplasty Surgery?

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Abstract Clonidine is an antihypertensive drug which acts through facilitation of Alpha-2 post-synaptic receptors and in addition to its antihypertensive, anti-anxiety and analgesic effects, its beneficial effects in reducing the bleeding during Neurosurgery and Orthopedics surgeries, delicate surgeries of ear and nasal and sinus endoscopy have been proved. In this study we discuss the effects of this drug in reducing bleeding during rhinoplasty surgery. A double-blinded clinical trial 80 patients have been conducted 40 patients received 5 µg/Kg of oral Clonidine, and 40 patients where placebo. The patients after surgery were divided into 4 groups according to the number of bloody standard gauzes during the surgery. Group 1(less than 2 bloody gauzes), group 2(2–3 bloody gauzes), group 3(4–5 bloody gauzes), group 4(more than 5 bloody gauzes). All the graded achieved results were analyzed using Chi-Square test and Fisher test. Mean and standard deviation (SD) of the amount of bleeding in the group who were receiving Clonidine were less than the witness group. Number of the patients in groups 3 and 4 for those who were receiving Clonidine was obviously fewer (1.8 ± 0.04 vs.

3.1 ± 0.05), ($P < 0.05$). Oral Clonidine as a pre-anesthetic drug causes decrease in bleeding during rhinoplasty surgery.

Keywords Clonidine · Bleeding · Rhinoplasty

Introduction

During the past decade there was a great tendency toward the beauty surgery specially rhinoplasty surgery. One of the most common and troublesome complications during rhinoplasty surgery is bleeding [1–3]. Hemorrhage during the surgery may occur as the result of the damage to each great vessels such as Angular artery or small vessels (capillaries) in the subcutaneous plexus [2]. Prolonged surgery is one of the upcoming results of bleeding during the surgery which cause an increase in the surgeon's fault because of the edema following a prolonged operation [3]. There are various methods for controlling the bleeding during the surgery, such as elevation of the head over the trunk during the operation, injection of the diluted solution of Epinephrine in the incision site and osteotomy site and also blood pressure control during the surgery [1, 3]. Clonidine is an antihypertensive drug with a central effect on Alpha-2 receptors and has been used as a premedication for reducing pain and also nausea and vomiting and tremor after surgery [4–6]. This drug performs its antihypertensive effect through reduction in sympathetic outgoing potential [7, 8]. And its beneficial effects in neurosurgery and orthopedics surgeries and nasal and sinus endoscopy have been proved [6, 9–12]. Also in two recent studies, appropriate effects of oral Clonidine on decreasing the amount of hemorrhage in microsurgery on middle part of the ear have been definitely proved [12, 13]. So far, there has been no

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study concerning Clonidine effect on bleeding during rhinoplasty surgery.

On this study we evaluated the effects of the usage of Clonidine as a premedication, on the amount of bleeding during the rhinoplasty surgery.

Materials and Methods

Our study was a prospective study with a clinical double-blinded trial. After completing the letter of satisfaction and signing it by the patients, 80 patients were divided in two groups for rhinoplasty surgery under general anesthesia.

Mean age of the patients were 22.5 with SD = 2.1 and they were consisted of 59 female and 21 male. All the patients who were receiving anticoagulants agents were eliminated from the study. The patients were randomly divided in two groups with the coordination of the gender: one receiving Clonidine (40 patients), and one placebo (40 patients). All the patients underwent a standard rhinoplasty surgery with opens approach. In none of the patients concurrent septoplasty hasn't been done because concurrent septoplasty surgery can cause more bleeding during the operation and is a disturbing factor. So patients with septum deviation were eliminated at the beginning of the study. In the group who received Clonidine, oral usage of 5 µg/Kg for 60 min before the operation was done. The placebo group received a pill similar to Clonidine in shape and color and size. The patient and the surgeon didn't know anything about the pill (Table 1).

Anesthesia with similar drugs such as Sodium Thiopental, Lidocaine, Midazolam, Fentanyl, Atracurium, and N₂O gas with regular dosage according to the patient's bodyweight was performed. All the patients' blood pressures were measured during the operation every 10 min and mean systolic pressure was maintained between 70 and 90 mmHg during the surgery using an infusion pump containing Propofol and Fentanyl and with the infusion rate relative to systolic blood pressure. As the patient's blood pressure dropped to lower than 70 mmHg, the infusion rate

was decreased or the infusion was ceased and after it rose, the infusion was restarted. In case of blood pressure higher than 90 mmHg, the infusion rate was increased. The muscle relaxant drug, Atracurium, was repeated every 20 min. All the surgery procedures were conducted by a chief surgeon. The amount of hemorrhage during the surgery was graded in 4 groups according to the defined classification as follow:

- (1) In this group, number of gauzes contaminated with blood was less than 2.
- (2) In this group, number of gauzes contaminated with blood was 2–3.
- (3) In this group, number of gauzes contaminated with blood was 4–5.
- (4) In this group, number of gauzes contaminated with blood was more than 5.

In this study, the amount of contamination with blood during the operation was taken on only one surface of a standard, conventional gauze (4inch × 4inch), and to prevent the blood from entering the nasopharynx, one Sterile mesh with Vaseline was inserted in each side in the inferior meatus for each patient, which were removed at the end of the operation, so suction was not used during the surgery at any stage.

All the information according to the above grading was analyzed by Chi-Square Test and Fisher Test.

Results

Among the 40 patients who received Clonidine before the procedure, 32 patients had dry mouth, and 24 ones had dizziness and blackening of eyes while they got up the bed or stood up. As the result, we recommend that patients who receive Clonidine before the surgery should be transported to the operation room with a wheelchair because of the potential risk of falling down. During the procedure, in receiving Clonidine group, 3 patients and in placebo group in one patient the systolic blood pressure fell lower than 65 mmHg which in all the cases after stopping the pump, the pressure raised above the 70 mmHg and was maintained (Table 2).

Mean amount of bleeding during the procedure in those who received the oral Clonidine was significantly lower than the placebo group ($P < 0.05$). Number of patients with the amount of bleeding less than 2 gauzes (group 1), and 2 or 3 gauzes (group 2) in oral Clonidine consumers were more than placebo group ($P < 0.05$). which is not. Also number of patients who were in group 3(4–5 bloody gauzes), and group 4(more than 5 gauzes), according to the grading of bleeding, in Clonidine receivers group was significantly ($P < 0.05$) less than the placebo group. In this study, no significant difference was observed in blood

Table 1 Comparison of the demographic and clinical characteristics in two groups

	Oral clonidine receivers group	Placebo group
Number of patients	40	40
Age	23 ± 2.1	25 ± 3
Operation time (min)	62 ± 10	70 ± 12
Mean arterial pressure	88 ± 8	92 ± 8
During the operation (mmHg)		

No significant difference was seen in mean blood pressure between two groups, $P > 0.05$

Table 2 Comparison of the amount of bleeding between both groups according to 4 groups grading

	Oral clonidine receivers group	Placebo group
Number of patients with bleeding grade I	17	12
Number of patients with bleeding grade II	13	17
Number of patients with bleeding grade III	9	3
Number of patients with bleeding grade IV	1	8

Significant difference was seen in the amount of bleeding between the two groups $P < 0.05$

pressure between the Clonidine receivers group and placebo group ($P < 0.05$).

Discussion

One of the most common problems during rhinoplasty surgery is bleeding which greatly affects the overall condition of the procedure, the duration of the operation and also the consequential cosmetic results. Occurrence of this problem depends on many variables concerning the patient, surgical conditions and anesthesia. One of the factors which cause a decrease in the amount of bleeding during rhinoplasty surgery is the control of blood pressure which its results have been proved well in the neurosurgery operations, orthopedics surgeries, delicate surgeries on the ear and repairing surgeries [6, 9–13]. In two separate investigations, the effects of this drug in decreasing the blood pressure in microscopic surgeries of the middle part of the ear and also in the reduction in using other anesthetic drugs (e.g. Isofloran, Fentanyl) for controlling the blood pressure have been proved [14, 15]. In spite of many searches in the international studies, so far, no research has been conducted about the influence of Clonidine on bleeding during the rhinoplasty surgery. Clonidine is a reducing agent of the sympathoadrenal strength which is used orally before the surgery to increase the reducing effect of anesthetic drugs on blood pressure [7, 8]. In this study, the effects of orally consuming of Clonidine before the rhinoplastic surgery to decrease the bleeding during the procedure have been showed. In this study, in spite of no obvious difference between the orally receivers of Clonidine and placebo groups in blood pressure, the amount of bleeding during the operation in grade 3 and 4

was significantly and obviously less in group who received Clonidine before the procedure than the placebo group. So, we recommend the use of Clonidine orally before the rhinoplasty surgery as an efficient drug in reducing the bleeding during the procedure.

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Conflict of Interest None.

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