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The effect of the pressure bandage use in varying the pain and swelling after lower third molar surgery

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A B S T R A C T

Lower third molar (wisdom tooth) surgery, is the most common oral and maxillofacial surgery that is performed by surgeons. This surgery is often accompanied by pain, swelling and trismus. Postoperative complications can affect the quality of life of patients after the surgery. Different methods such as the use of corticosteroids, NSAIDs, drain and cryotherapy are used to reduce complications after surgery. Pressure reduces edema and the third space. The aim of this study was to determine the effectiveness of compression bandages to reduce swelling and pain after third molar surgery .Thirty-four patients with bilateral lower impacted wisdom tooth were selected. In all patients pressure bandage (Barton bandage) was applied in one side, while on the other side, the bandage was not applied. Swelling of the face, 48 hours after surgery was measured using anatomical landmarks in each patient. Postoperative pain, 24 and 48 h after surgery, was measured respectively. Our patients included 20 female patients and 14 male patients in the range of 18 to 35 years which Barton bandage was used in left side in 60% and in the right side in 40% of patients. The mean amount of swelling with Barton bandage was 4.6241±3.18412 and the mean amount of swelling in patients without Barton bandage was 9.1674±3.63477, the swelling was significantly low in patients Barton bandage($p<0.05$). The pain in patients with pressure bandage 24 and 48 hours after the surgery was significantly lower than patients without pressure bandage($P<0.001$). There was a significant reduction of pain and swelling in the side of pressure bandage. Postoperative application of pressure bandage is an effective way to reduce pain and swelling after lower third molar (wisdom tooth) surgery.

Introduction

Various factors such as high bone density, the adjacent teeth situation, mucosa thickness and genetic factors can cause the impaction of the wisdom teeth prevalence of

the Impaction of wisdom teeth is 30-20% in the lower jaw (1). Therefore, the impacted wisdom teeth surgery is one of the most common surgeries in dentistry. Post operation complications like pain, swelling and trismus are relatively common which causes the patients to avoid the surgery or post pone it (1, 3). The overall complication of the surgery was reported to be as 12% (3). Reducing the postoperative complications is one of the important requirements in Dentistry. (4) To reduce the surgical complications of the wisdom teeth surgery, various medicinal and non-medicinal methods have been used (1).

In a study by Dr. Ferlish and colleagues (1993), the uses of Dexamethasone have been reported to be effective in reducing pain and swelling (5). In the study by Mansour Khorasani in 1998, a dose of 50 mg Prednisolone was used to reduce swelling. Similar results were obtained using the Methylprednisolone in the Barcelona University (4).

The side effect of NSAIDs includes gastric complications, peptic ulcer, hepatic toxicity, renal toxicity. The corticosteroids short term complications includes insomnia, habitual changes and insomnia and nauseas, vomiting, respiratory distress dependency can be of opioids side effects(6).

With regard to the complications of the systemic drugs, other procedures such as ultrasonic procedures can be helpful in reducing the complications of such surgeries (7). Laser therapies can also be effective in reducing the postoperative pain and swelling but these modalities are limited and expensive (8).

Other non-medical procedures include, ice compress, drainage and other surgical procedures (1, 9, 11).

Pressure bandage is one of the options in patients with lower limbs edema, this kind of bandage can reduce the homeostasis and edema (12).Pressure bandage can also be used in increasing the vitality of skin grafts (13). The pressure bandage has been used in periauricular sinus surgeries (14).

In maxillofacial surgeries, the Barton bandage has been used for immobilization of the mandible fractures; pressure bandage is easy to use and has no systemic complications (15).

The aim of this study is the usage of pressure bandage in reducing the pain and swelling in third molar tooth surgery.

Methods and Materials

In a clinical trial in the maxillofacial surgery department of Tabriz faculty of dentistry during the years 2011 to 2012 we studied 34 patients with impacted lower wisdom tooth surgery, the effect of pressure bandage was evaluated on reducing the pain and swelling of third molar tooth surgery.

The patients were selected randomly and the surgery was done by a single surgeon and in the same situation. There was at least a month time interval between the surgeries of two sides and a single dose of 1 gram Amoxicillin and four tablets of 500 milligrams Acetaminophen was administrated for 3 days. The surgery was done under local anesthesia with nerve block using carpools of 2% Lidocaine with 1/80000 epinephrine injection.

The surgery begun with incision of mesial papilla of the first molar tooth in the first and second molar gingival line to distobuccal line angle, this incision was continued to the back and out to the top edge of the anterior ramus. Buccal mucoperiosteal

flap was fully sided with a periosteal elevator and the pocket flap was used for the surgery. Minnesota retractor was mostly used for pushing the flaps to avoid damage to the soft tissue during surgery.

After pushing the flaps and complete overview, all the bones of the occlusal, buccal and distal sides of the impacted tooth was removed. The amount of removed bone was different Based on the Depth of impacted tooth, root shapes and axial angle of the teeth. No 8 round burs were used for the removing of the bone around the tooth.

In cases of the need for tooth cutting, the No 703 bur was used. After removing the needed bone and exposing the tooth, the impacted tooth was removed siding the elevator. After extraction of the impacted tooth, the tooth cavity was carefully reviewed and bone fragments and other soft tissue fragments were washed with 0.9 normal saline. Rough edges of the bone, was smoothed using a rasp especially in areas where the bone was in contact with the elevator. Remaining teeth follicles were pulled using the hemostat. The final wash was performed before closing the wound and the tooth cavity was checked for bleeding.

Flap was then put back in place and 2 or 3 sutured was done using the silk sutures for stabilizing the flap. The first stitch was behind the second molars. The second stitch was after the first stitch on the alveolar ridge and the next stitch was on the mesial papilla. In the experiment side, operation the pressure bandage was applied for 24 hours immediately after surgery until the day after. The pressure bandage was used with Barton method. In this method, the bandage is tied horizontally in frontal-occipital direction and a second bandage is tied vertically. The bandage gauze was used under the second bandage and was fixed using a leucoplast adhesive band. People who were blinded for the bandage side after 48 hours of surgery assessed all the patients.

The measurement of the key variables was as below:

The pain was measured in the first and second day after the surgery, and the number 0 was assumed as no pain, no 1 was assumed for weak mild pain, no 2 was assumed for moderate pain and no 3 was assumed for severe pain.

In addition, the swelling was assessed with measuring the Tragus to lip angle distance and gunion to external cantus distance, before and 48 hour after the surgery. These distances were measured using a measuring tape. The sum of the Tragus to lip angle distance and gunion to external cantus distance, before and after the surgery was divided into the same distance before the surgery and multiplicities to 100 for calculating the swelling percent. Inflation rate in patients were measured at two different times with and without bandages, t-test was used to compare the amounts.

Result and Discussion

Our patients included 20 female patients and 14 male patients in the range of 18 to 35 years which Barton bandage was used in left side in 60% and in the right side in 40% of patients. The mean amount of swelling with Barton bandage was 4.6241±3.18412 and the mean amount of swelling in patients without Barton bandage was 9.1674±3.63477(Figure 1), the swelling was significantly low in patients Barton bandage($p<0.05$). The patient's pain, 24 and 48 hours after the operation in bandage and non bandage form is shown in table 1.

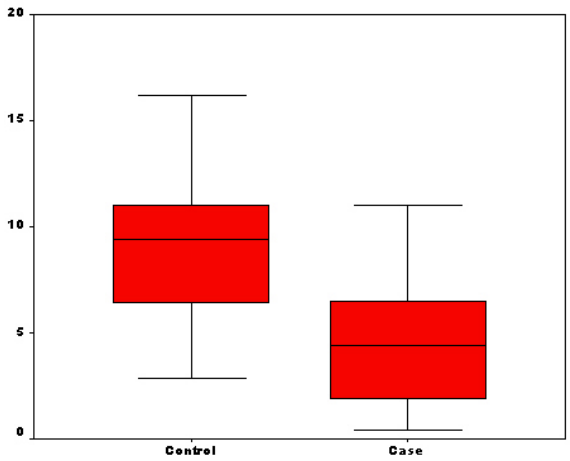

Figure.1 Distribution swelling in patients of both groups

The pain in patients with pressure bandage 24 and 48 hours after the surgery was significantly lower than patients without pressure bandage (P<0.001) .In a study by Mehra and colleagues on 80 patients with lower wisdom teeth surgery, it is indicated that NSAIDS has a better results in reducing the PGE2 and inflammation comparing to intravenous corticosteroids or not administrating a drug (14).

Table.1 Pain severity of patients in both groups

	Pain severity			
	None	Mild	Moderate	Severe
Case group after 24 hour	12(%35.3)	12(%35.3)	9(%26.5)	1(%2.9)
Control group after 24 hour	4(%11.8)	8(%23.5)	12(%35.3)	10(%29.4)
Case group after 48 hour	12(%35.3)	15(%44.1)	7(%20.6)	0(%0)
Control group after 48 hour	7(%20.6)	8(%23.5)	14(%41.2)	5(%14.7)

In another study by Warraich et al on 100 patients requiring the surgery of lower wisdom teeth, it is shown that Dexamethasone ampoule administration had a significant effect on reducing the pain, trismus and swelling comparing to control group (15).

With regard to the clear effect of Corticosteroids and NSAID on reducing the pain and the postoperative complication of third molar teeth, we evaluated the effect of pressure bandage on reducing the postoperative pain and swelling.
The pressure bandage has been used for reducing the hematoma and third space in various parts of the body.

In a study by Heo et al on 37 patients undergoing periauricular sinus surgery it is indicated that the use of compression bandage could significantly reduce the recurrence and hematoma after surgery (16). Pressure bandage could also reduce the pain and swelling in the study of Gordon and colleagues (17). Palmer and colleagues have used the hydrostatic pressure of mercury to reduce edema and stated that the edema was significantly decreased in 83% of cases (18). Nilsson and colleagues had studied the effect of pressure bandage on venous drainage, reducing the swelling and pain in pregnant women, and had stated that compressing stocking had a significant effect on reducing the edema in patients (19).

With regard to the application of the compression bandage on other sites of the body, we used the pressure bandage as a compressing dressing for increasing the exudative inflammatory lymphatic drainage and reducing the pain and swelling following the wisdom tooth surgery.

Conclusion

According to this study, the use of compression bandages after wisdom tooth

surgery is effective in reducing pain and swelling.

Suggestions

With regard to the findings of present study and its efficacy, the use of this method is recommended in reducing the swelling and the pain in oral surgeries.

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