# Post-operative Management of Impacted Third Molars: A Series of Case Reports

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**Abstract**

**Background**. This series of nine case reports evaluated the effects of three oral products (gel, rinse and drops) as adjunctive therapy for post-surgical management of four impacted third molars.

**Methods**. Nine patients, not on medication, were scheduled for removal of four asymptomatic impacted third molars (ClassII/III position C) for surgery. The postoperative course of these nine patients were objectively followed using a validated quality of life scale the Health Related Quality of Life (HRQL), visual analogue pain measurement and post-operative analgesic consumption. [15] Facial reference distances and maximum opening to objectively follow swelling and trismus were also measured. [17]

**Results**. Most patients use Hydrocodone 5 mg/Acetaminophen 325 mg for post-operative pain control for the two to three post-operative days followed by recovery within four days. These oral products provided effective post-operative recovery after removal of impacted third molars in these nine patients.

Keywords: Impacted third molars, post-operative swelling, post-operative pain

## Introduction

Removal of wisdom teeth is one of the most common procedures performed in Oral & Maxillofacial Surgery. The most common postoperative complications of impacted lower third molar extractions are extended pain, trismus and facial swelling. These symptoms slow the patient's recovery and influence his or her ability to resume normal daily activities (2-3) and usually peak 3-4 days after the surgery.

## Patient Cases

This series of cases involved nine patients, two males and seven females between the ages of 17-21. All patients received the following standard medications: two grams of Amoxicillin 1 hour pre-operatively followed by Amoxicillin 500 mg three times daily for 5 days. All patients received 15 tablets of Norco 5/325mg to be used postoperatively as needed for pain.

Facial swelling, trismus and pain were measured on a post-op days two, four, and seven by office staff. The facial swelling was measured using a tape measure. Four measurements were made between 6 reference points : tragus, lateral canthus of eye, pogonion, ala, gonion and the corner of the mouth. The postoperative sum of the measurements was considered as the baseline for that side. Mouth opening, taken as the maximum distance between upper and lower central incisors was measured to the nearest mm pre-operatively. Post-op Trismus was measured in an identical fashion on days two, four, and seven.

Patient reported outcome measures were also recorded. The number of narcotic analgesic tablets taken measured post-operative pain. Post-operative pain was rated daily using a 100-point visual analog scale (VAS) anchored by verbal descriptors “no pain”(0) and “very severe pain” (100).

After surgery, each patient was given the HRQOL instrument in a diary as described by Shugars et al (16). HRQOL data were collected from the patients daily for 7 days post-operatively.(3,12-16)

**Results:**

**100-point Visual Analog Scale (VAS)**

|----------|----------|---------|---------|---------|---------|----------|----------|----------|---------|
0 10 20 30 40 50 60 70 80 90 100
None ----------Mild---------- ----------Moderate--------- ----------Severe----------

Table I: Number of Norco pills required by each patient over the course of 7 days.

| | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 |
|---|---|---|---|---|---|---|---|
| CT | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MJ | 6 | 3.5 | 1 | 0 | 0 | 0 | 0 |
| BW | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LD | 4 | 4 | 2 | 0 | 0 | 0 | 0 |
| KM | 4 | 4 | 3 | 3 | 2 | 2 | 2 |
| SS | 7 | 5 | 4 | 2 | 2 | 1 | 0 |
| RL | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| DC | 3 | 2 | 1 | 0 | 0 | 0 | 0 |
| SC | 2 | 1 | 3 | 3 | 0 | 0 | 0 |

Graph I : Summary of Norco pills required over the course of 7 days by each patient.

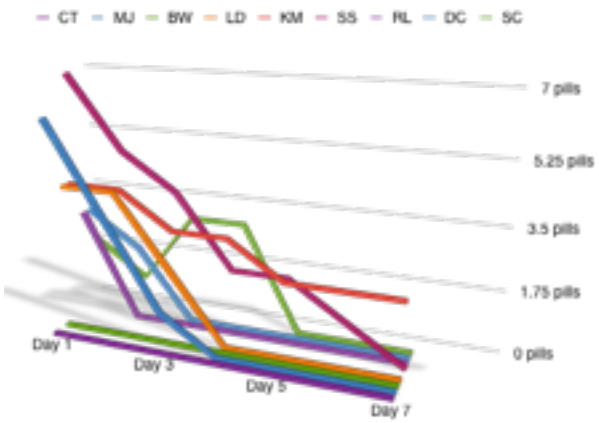



TABLE II: Average # of Norco pills taken

| Days Post Op | DAY 1 | DAY 2 | DAY 3 | DAY 4 | DAY 5 | DAY 6 | DAY 7 |
|---|---|---|---|---|---|---|---|
| avg # Norco pills | 3.5 | 2.3 | 0.8 | 0.6 | 0.5 | 0.4 | 0.25 |

Table III: Severity of Daily pain as ranked by the patients at home.

| PATIENT | DAY 1 | DAY 2 | DAY 3 | DAY 4 | DAY 5 | DAY 6 | DAY 7 |
|---|---|---|---|---|---|---|---|
| CT | 68 | 65 | 59 | 40 | 35 | 15 | 9 |
| MJ | 80 | 58 | 50 | 40 | 40 | 17 | 0 |
| BW | 80 | 30 | 30 | 20 | 8 | 10 | 10 |
| LD | 70 | 60 | 30 | 10 | 10 | 0 | 0 |
| KM | 83 | 74 | 65 | 63 | 44 | 43 | 34 |
| SS | 90 | 70 | 50 | 40 | 40 | 30 | 20 |
| RL | 80 | 40 | 50 | 35 | 20 | 15 | 4 |
| DC | 60 | 60 | 60 | 59 | 40 | 20 | 10 |
| SC | 60 | 80 | 70 | 60 | 40 | 10 | 10 |

Graph II: Summary of Severity of pain ranked by the patients at home.

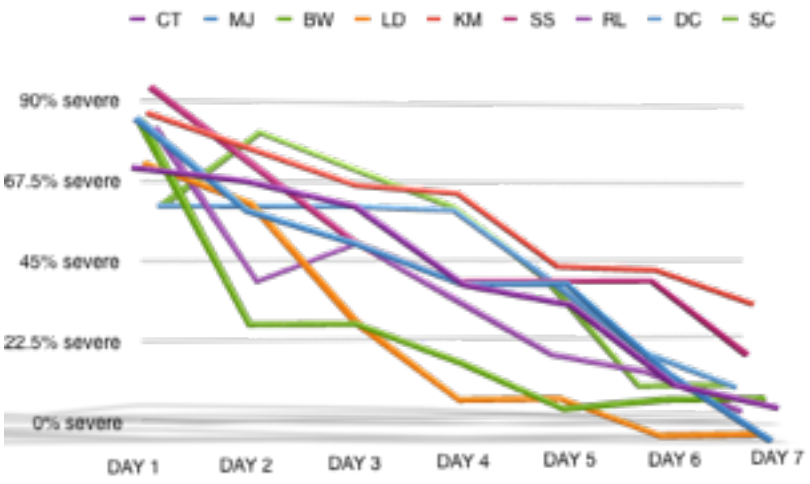
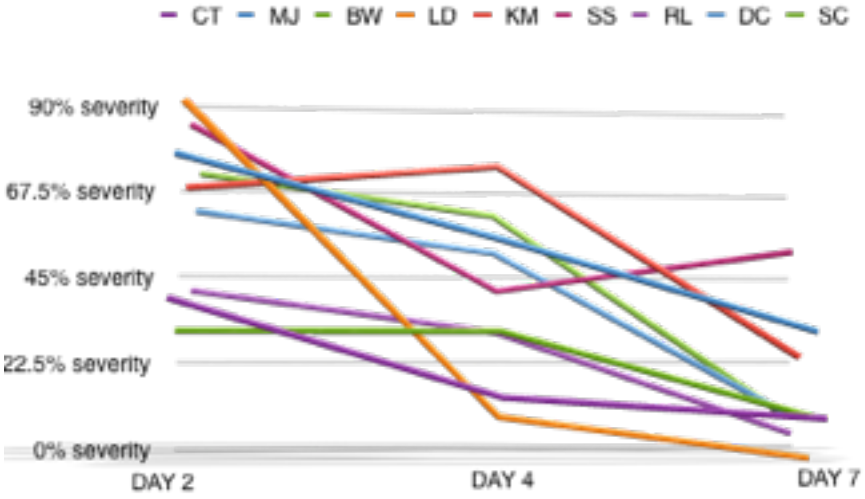



Table IV: Summary of Severity of pain ranked by the patients during post-op visit 2,4,7 days after Sx.

| PATIENT | DAY 2 | DAY 4 | DAY 7 |
|---|---|---|---|
| CT | 37 | 15 | 10 |
| MJ | 70 | 51 | 30 |
| BW | 30 | 30 | 10 |
| LD | 84 | 10 | 0 |
| KM | 64 | 70 | 24 |
| SS | 80 | 40 | 50 |
| RL | 40 | 30 | 5 |
| DC | 60 | 50 | 10 |
| SC | 70 | 60 | 10 |

Graph III: Summary of Severity of pain ranked by the patients during post-op visit 2,4,7 days after Sx.



**100-point Visual Analog Scale (VAS) for post-op recovery:**

|----------|----------|---------|---------|---------|---------|----------|-------------|-----------|---------|
0 10 20 30 40 50 60 70 80 90 100
---Worst possible Health ---- ------Average Health---- ----Best possible Health--

Table V: Dental Health ranked by patients daily for 7 days after Sx

| Patient | DAY 1 | DAY 2 | DAY 3 | DAY 4 | DAY 5 | DAY 6 | DAY 7 |
|---|---|---|---|---|---|---|---|
| CT | 20 | 30 | 47 | 75 | 80 | 90 | 90 |
| MJ | 40 | 58 | 65 | 70 | 76 | 84 | 95 |
| BW | 50 | 50 | 60 | 72 | 70 | 80 | 80 |
| LD | 50 | 70 | 70 | 80 | 90 | 90 | 90 |
| KM | 45 | 55 | 55 | 65 | 74 | 86 | 95 |
| SS | 60 | 50 | 70 | 70 | 70 | 80 | 80 |
| RL | 40 | 45 | 58 | 70 | 78 | 90 | 95 |
| DC | 70 | 70 | 72 | 80 | 90 | 90 | 95 |
| SC | 80 | 70 | 60 | 60 | 80 | 80 | 90 |

Graph IV: Dental Health ranked by patients daily for 7 days after Sx

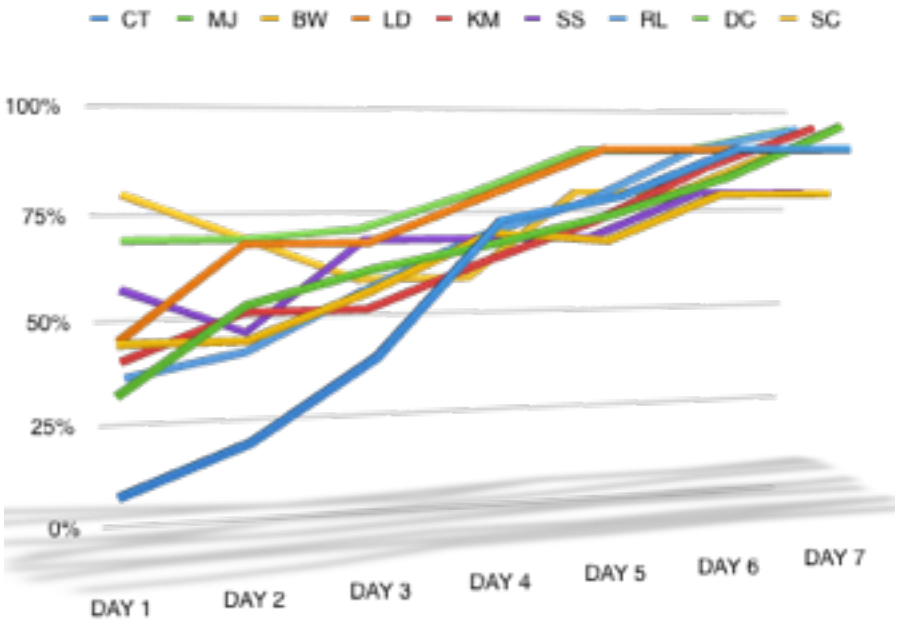


Table VI: Summary of Overall Health ranked by patients daily for 7 days

| PATIENT | DAY 1 | DAY 2 | DAY 3 | DAY 4 | DAY 5 | DAY 6 | DAY 7 |
|---|---|---|---|---|---|---|---|
| CT | 60 | 65 | 70 | 70 | 80 | 85 | 90 |
| MJ | 40 | 57 | 65 | 70 | 76 | 84 | 95 |
| BW | 50 | 60 | 70 | 80 | 80 | 90 | 90 |
| LD | 40 | 70 | 80 | 80 | 80 | 90 | 92 |
| KM | 45 | 55 | 65 | 73 | 66 | 68 | 65 |
| SS | 70 | 70 | 80 | 60 | 60 | 80 | 90 |
| RL | 40 | 60 | 60 | 68 | 80 | 90 | 96 |
| DC | 70 | 60 | 70 | 80 | 80 | 90 | 95 |
| SC | 80 | 40 | 70 | 70 | 80 | 80 | 90 |

Graph V: Summary of Overall Health ranked by patients daily for 7 days

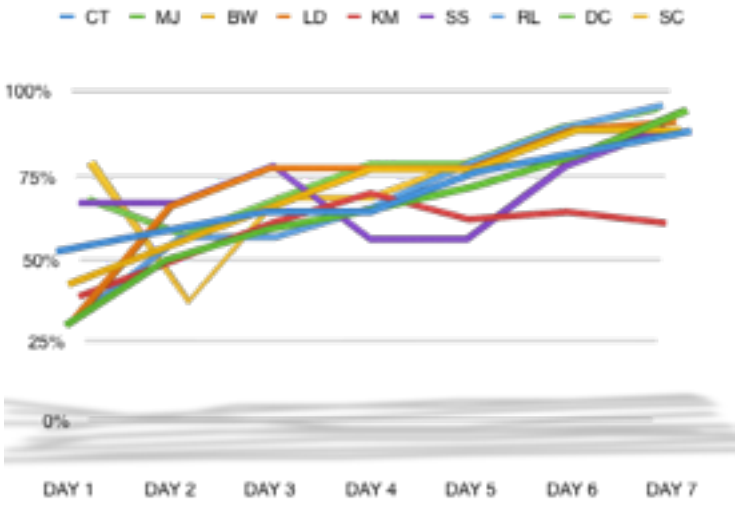



Table VII: Average Trismus / Mouth Opennig

| Days Post Op | Pre-Op | DAY 2 | DAY 4 | Day 7 |
|---|---|---|---|---|
| mm | 49 | 22.56 | 29.89 | 39.78 |
| % trismus | | 46% | 61% | 81.20% |

Table VIII: Average Post-op Swelling

| Days Post Op | Pre-Op | DAY 2 | DAY 4 | Day 7 |
|---|---|---|---|---|
| MM | 913.75 | 944.88 | 922.75 | 915.63 |
| % increase from Base line | | 3% | 1% | 0.2% |

## Discussion

Intra-operative and postoperative use of corticosteroids is a pharmacologic approach commonly utilized to reduce postoperative edema. The mechanism of action is believed to be the inhibition of the initial steps of the inflammatory response to surgical injury.(4-6) The effect of oral corticosteroids on post-operative morbidity varies.(7,8) Grossi et al found no significant reduction in post-operative pain from submucosal injection of steroids during the surgical removal of third molars.(17) Other studies have shown that steroids alone do not have a clinically significant analgesic effect (18,19) and in some cases the use of steroids may increase a patient's reaction to pain by suppressing beta-endorphin levels. (20)

Arnica montana is frequently used to reduce swelling and acute inflammation in the setting of post-surgical trauma. Brook M Seeley, et.al published the results of their randomized, double-blind, placebo-controlled study where they looked at the effect of Arnica Montana on bruising in face lifts. They found that patients taking perioperative Arnica montana exhibited significantly less ecchymosis. (9) Arnica montana is believed to increase the flow of blood around bruised tissue causing escaped fluids to be absorbed by the body. The absorption of the fluids reduces the swelling by relieving the pressure on nerve endings. This series of cases used fourteen ingredients—all monographed in the HPUS—applied locally and systemically to reduce postoperative swelling and pain after third molar surgery.

This study evaluated the use of these pharmaceutical products to decrease swelling and pain after removal of impacted third molars Patients required less then one Narcotic pain pill on post-operative day three. On the fourth post-operative day the swelling was reduced three-fold compared to the second post-operative day and was only 1% increase from the pre-operative baseline. Recovery for most HRQL measures, including pain occurred on post-operative day four. In contrast White R.P. et al published a study in which they looked at 630 patients undergoing third molar removal and reported the recovery for most HRQL measures occurred within five days after surgery. However, recovery from pain was delayed. By post-operative day seven, 15% of patients continued to report post-operative pain as severe, 5% reported post-operative pain as average. (3)

To date, we do not have a medication that reduces swelling and pain, and improves the rate of post-operative recovery. Narcotic pain medications interfere with normal activities such as school or work. The sooner the patient can stop taking narcotic pain medications, the sooner they can return to their everyday activities. Decrease in post-operative trismus and swelling is associated with patient satisfaction and comfort. (21) In this series of case reports patients recovered 1-2 days more quickly when compared with the average patient in other studies who received oral or submucosal corticosteroids. (16-19) This study was limited in scope (nine patients) and there were no controls.

Based on this series of case reports, we generated some testable hypotheses for further studies of the effectiveness of VEGA gel, drops and rinse after surgical removal of impacted third molars.

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