

# Kinesiology Tape in Comparison with Submucosal Injection of Dexamethasone in Reducing Pain and Swelling After Surgical Removal of Impacted Lower Wisdom Teeth

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## الخلاصة

**الأهداف:** يهدف البحث إلى مقارنة حقن عقار الديكساميثازون وشريط الكنزيبولوجي اللاصق في تخفيض التورم والالام التي تتبع عمليات قلع ضرس العقل السفلي. **المواد وطرائق العمل:** اختبرت مجموعتان بشكل عشوائي، لكل مجموعة خمسة عشر مريضاً، المجموعة رقم ١ تم استخدام لاصق الكنزيبولوجي موضعياً خارج الفم لسبعة أيام، والمجموعة رقم ٢ تم حقن عقار ديكساميثازون ٤ ملغم في الطبقة تحت المخاطية الفموية مباشرة بعد الانتهاء من العملية. تم تقييم التورم باستخدام الشريط المدرج والالام يتم تقييمه بشريط مدرج من ١ - ١٠ للأيام ٣ و ٧. **النتائج:** لم يتم ملاحظة فروق معنوية باستخدام العلاجين بشكل واضح في اليوم الأول والثالث والسابع بالنسبة للتورم، بينما الالام كان هناك فرقا معنوياً واضحاً لليوم السابع. **الاستنتاجات:** استخدام شريط الكنزيبولوجي اللاصق تأثيره مقارب إلى ديكساميثازون في تخفيض التورم والالام لذا يتم اعتبار شريط الكنزيبولوجي اللاصق حلاً مساعداً لدى المرضى الذين لا يمكن استخدام عقار الديكساميثازون معهم.

## ABSTRACT

**Aims:** the purposes of the suggested research are to assess the effectiveness of different protocols in decreasing oedema and pain post extraction of third molar wisdom teeth. **Materials and Methods:** The research involved thirty patients whom had an impacted mandibular wisdom tooth. Kinesiology adhesive tape put for one week for 15 cases of group one and Dexamethasone 4 mg submucosally injected directly post operatively for other 15 cases in group two. Swelling was calculated by a ruler tape from known points in human face and mean taken. Also, pain evaluated by VAS using ribbon gauge degreed from 1 to 10 scores and mean taken. Readings had been taken for the first day of surgical intervention, 3rd day and seventh day. **Results:** There was no significant statistical differences were documented statistically for oedema readings concerning two study methods for day one, three and seven following the operation, and there were highly significant readings related to pain parameters at day 7 only and no significant findings at other days of the study. **Conclusions:** Usage of Kinesiology adhesive tape clinically was closely with a same advantageousness with Dexamethasone injection submucosally in dropping the oedema and pain parameter, although clinically dexamethasone was better in both parameters than Kinesiology tape, so it can be used additionally in contraindicated cases of prescribing steroids for alleviating ache, oedema following to wisdom teeth surgery.

**Keywords:** Kinesiology adhesive tape, Swelling, Pain, Dexamethasone, lower third molar teeth removal.

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## INTRODUCTION

Third molar teeth surgical removal associated with unpleasant consequence like pain, oedema, bleeding or nerve dysfunction<sup>(1)</sup> some of these are causes related to the patient, others had dental factors and some relates to the operator<sup>(1)</sup>. There are many ways available to decrease these surgical side effects like analgesics corticosteroids cryo-therapy or manual lymphatic draining<sup>(3-7)</sup>. kinesiology adhesive tape (KT) which was used in sporting injures, myalgia or arthralgia<sup>(8)</sup>. KT acting by uplifting the skin, draining and alleviating the hematomas and lymph fluid<sup>(9)</sup> by creating a new place for the congested fluids according to physical rules of fluids<sup>(10,11)</sup> Dexamethasone are capable of reducing the postoperative oedema after surgical third molar removal<sup>(12)</sup>. As to postoperative pain, dexamethasone had an effect on post-operative pain by reducing the need for analgesic rescue tablets used post-surgical extractions<sup>(13)</sup>.

## MATERIALS AND METHODS

The study had been done at Mosul university faculty of Dentistry oral and MaxFax surgery department with a permission from local academic committee. A special case sheet done for this study was used. Thirty chosen patients were arbitrarily enrolled with an age from 18 to 32 years. The registered patients had wisdom tooth impaction reinforced by clinical and radiographic evaluation. Inclusion criteria: They included partial bony impaction of lower

wisdom teeth with "Class II or III and position A, B or C", according to "Pell and Gregory classification on a periapical radiograph". Entirely angulated of impacted lower wisdom teeth were comprised in the research cases were 18 years of age or older, with no pericoronitis and infection free at the time of surgical intervention.

Pederson scale was used to assess difficulty of the impaction as follows:

A: according to the angulation:

Mesioangular impaction :1, Horizontal impaction :2, Vertical and transverse :3, and Distoangular :4

B: according to the depth:

Level A :1, Level B :2, Level C :3

Score 3 is considered simple, score (4-5) is considered moderate, and score (6-7) is considered difficult.

"Exclusion criteria" comprised patients with history of compromised health condition, history of sensitivity or hypersensitivity to the medications used in this clinical research (i.e. Kinesiology tape, dexamethasone, Voltarin), new usage of NSAIDs pills, long-lasting taking of any medicine (any corticosteroids or NSAIDs), expectant or lactating women, and cases rejected being tangled in the research or those who could not be present the follow up calls or those who used non-trial medications throughout the gathering data period. the impacted wisdom teeth were removed by minor oral surgical procedure by giving local anesthetic solution, the surgery was done and

then closure of the flap also achieved. The cases were haphazardly dispersed into two research groups; after finishing all cases of the research were given Julphamox 500mg capsule (Julphar, UAE) three times a day for 3 days for group of submucosal Dexamethasone 4 mg 1 ml. (Germany) and KT group, a Kinesiology adhesive tape (KINESIO TEX gold blue and beige color, China) was put extra-orally by the surgeon in same manner for all patients according to the path of lymphatic drainage for the KT group only, for one week, and the other group had been injected topically Dexamethasone submucosally directly post operatively. Calculation of edema was done by a facial readings measured by flexible extent gauging stripe of: Tragus-midline, Tragus-commissure of mouth, and Gonion-lateral

canthus before the surgery and then later on as a reference points and guide lines<sup>(14)</sup> and mean taken for them and used as a parameter. Also Pain assessed by VAS on graduated gauge from 1 to 10. The readings done in first 24 hours, 72 hours and one week. Statistical data analysis was done utilizing independent T- Test. SPSS program version 25. A highly significant difference at  $p < 0.05$ .

### RESULTS

Dexamethasone group included (15 patients) 10 male patients and 5 female patients with age mean 24.5 years and 7 males and 8 females for Kinesiology group (15 patients) with age mean 24.1 years. Swelling parameter according to time shown in Table (1) and pain parameter according to time shown in Table (2).

**Table (1):** Swelling parameters related to treatment groups

Parameter	Treatment	p- value	Sig. (2-tailed)
Swelling Day 1	Kinesiology tape	0.561	0.418
	Dexamethasone		0.418
Swelling Day 3	Kinesiology tape	0.503	0.902
	Dexamethasone		0.902
Swelling Day 7	Kinesiology tape	0.686	0.574
	Dexamethasone		0.574

\* P value significant at  $\leq 0.05$ .

**Table (2):** Pain parameters related to treatment groups

Pain Day 1	Kinesiology tape	0.893	0.000
	Dexamethasone		0.000
Pain Day 3	Kinesiology tape	0.107	0.000
	Dexamethasone		0.000
Pain Day 7	Kinesiology tape	0.015*	0.002
	Dexamethasone		0.003

\* P value significant at  $\leq 0.05$ .

A descriptive statistical analysis of swelling related to Dexamethasone group and kinesiology group as shown in Table (3) and descriptive analysis related to pain parameter shown in Table (4), as a comparison results concerning post-operative swelling, the preoperative reading statistically was not significant in all readings this means there is a close relation between treatments methods in reducing edema. Comparison analysis between groups related to pain showed highly significant readings for day 7 (0.015) while other readings was not significant as shown in Table (4).

**Table (3):** Group statistic descriptive analysis related to swelling parameter

	Group	Mean	Std. Deviation	Std. Error Mean
Swelling Day 1	Kinesiology tape	11.33	.61023	.15756
	Dexamethasone	11.53	.71780	.18534
Swelling Day 3	Kinesiology tape	11.72	.67316	.17381
	Dexamethasone	11.75	.78819	.20351
Swelling Day 7	Kinesiology tape	11.37	.63298	.16344
	Dexamethasone	11.51	.71301	.18410

**Table (4):** Group statistic descriptive analysis related to pain parameter

	Group	Mean	Std. Deviation	Std. Error Mean
Pain Day 1	Kinesiology tape	5.600	.63246	.16330
	Dexamethasone	2.133	.74322	.19190
Pain Day 3	Kinesiology tape	2.800	1.08233	.27946
	Dexamethasone	.8000	.56061	.14475
Pain Day 7	Kinesiology tape	1.333	1.04654	.27021
	Dexamethasone	.3333	.48795	.12599

## **DISCUSSION**

Utilization of steroids had common applications in general surgery and especially in oral surgery for reducing oedema<sup>(15)</sup> including wisdom teeth surgical removal<sup>(16)</sup>. But the steroids carry many of side effects topically and systemically, in a research done by Szolonoky et al., they inspected the usefulness of manual lymph drainage subsequently to third molar teeth surgery and they get a clear decreasing of post-operative swelling and pain parameters<sup>(7)</sup>. Although Kinesiology tape has been increasingly used in the treatment manners, there is no proof regards probable mechanisms for advantageous properties of KT<sup>(8)</sup>. KT has a possible effect on reducing swelling and losing blood and lymphedema in neoplastic conditions<sup>(9,17-19)</sup>. In our research we found that there was not statistical difference between management groups in day 1, day 3 and day 7 related to oedema mostly because submucosal injection of dexamethasone has immediate action according to pharmacological actions and also the KT has immediate action and also may be related to psychological aspect of utilization of the tape. But related to pain parameter there was highly significant reading as these methods decrease inflammatory mediators although dexamethasone is better than kinesiology tape, which is similar to the findings of Heras et al in a study similar to our study in 2019, this may be related to fast action and apparent clinical

action of dexamethasone on pain parameter but KT has little effect on pain and at day 7 appear because may be related to subsidence of inflammatory mediators that cause pain<sup>(20)</sup>.

## **CONCLUSIONS**

Utilization of Kinesiology adhesive tape clinically was nearly similar to Dexamethasone injection submucosally in reducing the oedema and pain parameter, although clinically dexamethasone was better in both parameters than Kinesiology tape, so that increases the probability of using Kinesiology adhesive tape as an auxiliary management in such cases.

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