

Case Report

Outstanding Effect of Orange Oil Extract as Adhesive Remover with Less Pain in Grafting Procedure

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Background: Pain at dressing change is main concern because it affects patients' distress. Generally, deep burns are not spontaneously healed and require skin graft operation to cover the burn wounds. However, this method requires the staples or sutures to fix the graft with wound bed and sometimes it also causes pain and discomfort to the patients when upon staple removal.

Objective: To demonstrate new technique of skin grafting.

Material and Method: In this case report, authors demonstrated a new technique of skin graft operation without staples by using sterile Fixomull® stretch, which is a non-woven adhesive tape to secure the skin graft on the wound bed, and orange oil extract (SOS Plus adhesive remover, Bangkok Medisupply, Thailand) to remove the dressing at the time of recipient site opening.

Results: The graft was observed to have taken 100 percent upon opening the dressing and after adhesive tape removal by orange oil extract.

Conclusion: This successful technique can decrease patients' pain, costs of operation, early mobilization and improved quality of wound care.

Keywords: Pain, Dressing change, Orange oil, Citrus oil, Skin graft

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There are increasing findings that pain at wound dressing change is a major concern for patients^(1,2). It can cause significant distress for the patient. This phenomenon can be reduced by using appropriate management. Even emphasizing complete wound healing is a mean to help this problem, some patients still suffered from this, especially in burn patients^(3,4). Skin grafting is a common operation for deep burn patients who have skin damaged from heat. Metal staples were generally used in order to fix the skin graft on to the wound bed of the recipient sites. The patient might not be comfortable during removal of the staples, which are embedded into skin, that cause pain. Pain killer medication and local anesthesia might be required in almost patients⁽⁵⁾. Moreover, there are also some bleeding after staple removal and the cost of treatment may increase if multiple staples are used.

Orange oil extracted from the peels of oranges

has been used as flavoring agents for decades. The botanical name for this aromatic plant is *Citrus Sinensis*. There are reports on their efficacy as anti-carcinogenic, anti-inflammatory and adhesive and tar removal activities^(6,7). The orange oil extract (SOS Plus adhesive remover, Bangkok Medisupply, Thailand) contains no harsh solvents and is proven safe on skin and hair. It is used as adhesive remover. This product is also biodegradable and non-toxic. It is gentle enough to be used on delicate skin to remove adhesives without harming the patient.

These findings encourage us to create our new technique that allowed the patient to avoid distress from staple removal. The purpose of this case report was to show our grafting operation without using staples. It also illustrates the outstanding efficacy of orange oil as adhesive remover.

Case Report

A 71-year-old Thai woman with 50% deep burn wounds was treated at Siriraj Out-Patient Burn Clinic every week after discharged from the hospital. She developed new wound over the previous healed wound on her right forearm at 3 weeks after discharged. The

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lesion characterized by red, moist and blister (Fig. 1). The wound did not heal after conservative treatment for 1 month. However, there is granulated wound on her right forearm instead. Her history illness was diabetes mellitus which is prone to develop chronic wound. After the wound was well granulated we decided to do skin grafting to accelerate wound closure and prevent other wound complications.

In the operating room, we harvested skin graft from the left thigh using Dermatome (Zimmer, Inc., UK) at depth 0.006 inches and was then applied on to the cleaned wound bed area. We put the hydrocolloids dressing (Urgotul® SSD, Uργο medical, UK) over the graft and was then secured with non-woven adhesive tape (Fixomull®, BSN Medical, Germany). This innovative technique was shown in Fig. 2. The first tape removal was performed 5 days after operation. We sprayed the orange oil onto the adhesive tape and left it to soak for 10 seconds. The adhesive tape could then be removed easily without pain and disturbance to the skin graft on recipient site. The graft was observed to



Fig. 1 The lesion characterized by red, moist and blister.

have taken 100 percent upon opening the dressing. The process of adhesive tape removal is shown in Fig. 3, 4. Follow-up at 2 weeks upon opening the dressing with orange oil with satisfied result was demonstrated in Fig. 5.

Discussion

The innovative method consists of our new technique for skin-graft operation and the efficacy of orange oil as adhesive remover. The non-woven adhesive tape could be removed easily after soaking with orange oil. It could help in the quality of wound care, minimizing wastage of staples and decreasing pain. The patient can have early ambulation, faster than conventional method. It can also help doctors and nurses to decrease labor time from staple removal and decrease patient anxiety for this procedure. The new method with the new product in routine clinical use should be preceded not only by an entire clinical analysis, but also by cost analysis. The mechanism of orange oil which works by thoroughly dissolving the glue in adhesive dressing tape, can be useful as an adhesive remover. However, it might be possible that other citrus oil could have the same property as orange oil. However, acidic pH must be considered an issue in open wound care. The efficacy and safety of this volatile oil should be investigated with larger sampling in further studies.

Conclusion

Authors succeeded with new skin-graft technique operation by using just adhesive tape without staples or sutures. The orange oil had an outstanding effect as an adhesive remover. This operative technique demonstrated the benefit for



Fig. 2 Dressing over the graft and secure with non-woven adhesive tape.



Fig. 3 The tape removal was done after 5 days from skin graft operation.

reduction in cost of surgical equipment, time of wound dressing, labor time, patient anxiety and pain.

What is already known on this topic?

Conventional technique for skin grafting was used staples to fix skin graft. Taking off staples is one of painful procedures for patients.

What this study adds?

Author demonstrated a new less painful with staple-less technique for skin grafting that gave good outcome of treatment.

Potential conflicts of interest

None.

References

1. Woo KY, Harding K, Price P, Sibbald G. Minimising



Fig. 4 The graft took 100 percent upon opening the dressing at 5 days after operation.



Fig. 5 Follow-up at 2 weeks upon opening the dressing with orange oil.

wound-related pain at dressing change: evidence-informed practice. *Int Wound J* 2008; 5: 144-57.

2. Atchison NE, Osgood PF, Carr DB, Szyfelbein SK. Pain during burn dressing change in children: relationship to burn area, depth and analgesic regimens. *Pain* 1991; 47: 41-5.
3. Perry S, Heidrich G, Ramos E. Assessment of pain by burn patients. *J Burn Care Rehabil* 1981; 2: 322-6.

4. Turner JG, Clark AJ, Gauthier DK, Williams M. The effect of therapeutic touch on pain and anxiety in burn patients. *J Adv Nurs* 1998; 28: 10-20.
5. Richardson P, Mustard L. The management of pain in the burns unit. *Burns* 2009; 35: 921-36.
6. Kamalak A, Atalay AI, Ozkan CO, Tatliyer A, Kaya E. Effect of essential orange (*Citrus sinensis* L.) oil on rumen microbial fermentation using *in vitro* gas production technique. *J Anim Plant Sci* 2011; 21: 764-9.
7. Velazquez-Nunez MJ, Avila-Sosa R, Palou E, Lopez-Malo A. Antifungal activity of orange (*Citrus sinensis* var. Valencia) peel essential oil applied by direct addition or vapor contact. *Food Control* 2013; 31; 1-4.

สารสกัดน้ำมันจากเปลือกส้มช่วยลดอาการปวดจากการลอกพลาสติกปิดแผลจากแผลผ่าตัดปลูกถ่ายผิวหนัง

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ภูมิหลัง: ความเจ็บปวดจากการทำแผลเป็นปัจจัยหลักที่ต้องคำนึงถึงเพราะจะทำให้ผู้ป่วยมีความวิตกกังวล โดยทั่วไปแล้วบาดแผลใหม่แบบลึก จะไม่สามารถหายเองได้และต้องการการผ่าตัดปลูกถ่ายผิวหนังเพื่อปิดบาดแผลใหม่ อย่างไรก็ตามวิธีนี้ต้องใช้เข็มหรือการเย็บปิดแผลเพื่อยึดตัวผิวหนังกับพื้นแผลและบางครั้งอาจก่อให้เกิดความเจ็บปวดและไม่สะดวกสบายต่อผู้ป่วยเมื่อถึงเวลาที่ต้องเอาแมคที่เย็บไว้ออก

วัตถุประสงค์และวัสดุและวิธีการ: ในการรายงานเคสนี้เรานำเสนอเทคนิคการผ่าตัดปลูกถ่ายผิวหนังแบบใหม่ โดยไม่ใช้แมคเย็บแต่ใช้แผ่นปิดแผลเทปปลอดเชื้อฟิคโซมูล ซึ่งเป็นเทปปิดแผลมายึดผิวหนังที่ปลูกถ่ายบนบาดแผลแทนการใช้แมค และการใช้น้ำมันสารสกัดเปลือกส้มมาใช้ในการลอกวัสดุปิดแผลเมื่อถึงเวลาที่ต้องทำแผล

ผลการศึกษา: เทคนิคนี้ทำสำเร็จสามารถลดอาการปวดและค่าใช้จ่ายจากการผ่าตัดของผู้ป่วยทำให้เคลื่อนไหวร่างกายได้ในระยะเริ่มต้นและเพิ่มคุณภาพในการรักษาบาดแผล

สรุป: เทคนิคการผ่าตัดปลูกถ่ายผิวหนังแบบใหม่โดยใช้แผ่นปิดแผลเทปปลอดเชื้อฟิคโซมูลและใช้น้ำมันสารสกัดเปลือกส้มลอกออกให้ผลการผ่าตัดที่ดี
