Aesthetic outcome and complications of simple interrupted versus running subcuticular sutures in facial surgery: A randomized controlled trial

Xiaomeng Liu, MD,[a,b,c] Patty J. Nelemans, PhD,[d] Lisa D. S. Frenk, MD,[e] Helma Sengers, MPA,[f] Stephania M. H. Tuinder, MD, PhD,[g] Peter M. Steijlen, MD, PhD,[a,b,f] Klara Mosterd, MD, PhD,[a,b] and Nicole W. J. Kelleners-Smeets, MD, PhD[a,b]

Maastricht, Almere, and Eindhoven, The Netherlands

Background: The suturing technique and its associated complications could affect cosmetic outcome after facial surgery. Literature on this topic is limited.

Objective: To compare the cosmetic results 12 months after treatment and complications associated with simple interrupted sutures (SIS) versus running subcuticular sutures (RSS) in facial surgery.

Methods: A randomized, controlled multicenter trial was performed. Adults receiving dermatologic surgery on the face were randomized to receive SIS or RSS for wound closure. The primary outcome was the overall opinion score on the Patient and Observer Scar Assessment Scale (POSAS) 12 months after surgery. Secondary outcomes were the complication rates and scores according to alternative methods for assessment of cosmetic outcome. The observer of cosmetic outcome was blinded to treatment assignment.

Results: 142 patients were randomized to receive SIS (n = 73) or RSS (n = 69). Twelve months after surgery, the median score of the overall opinion on the POSAS was 2.0 (range 1-8) according to the patients and 3.0 (range 1-8) according to the observer in both groups. In the RSS group, hyper- or hypoesthesia was reported more often.

Limitations: The cosmetic result was assessed by 1 observer.

Conclusion: SIS and RSS in facial surgery resulted in comparable cosmetic outcomes. RSS was more often associated with hyper- or hypoesthesia. (J Am Acad Dermatol http://dx.doi.org/10.1016/j.jaad.2017.04.1128.)

Key words: aesthetic outcome; complications; cosmetic result; dermatologic surgery; POSAS; running subcuticular suture; simple interrupted suture; suturing technique; wound healing.

Due to the rise in the incidence of skin cancer, facial surgery is being performed with increasing frequency by dermatologists and plastic surgeons all over the world. Simple interrupted sutures (SIS) and running subcuticular sutures (RSS) are frequently used in dermatologic surgery. The suturing technique might influence the final aesthetic outcome. Currently, because of a lack of evidence, the choice of suturing technique is largely dependent on the surgeon's preference. Two earlier original studies have looked into this subject and found no difference in cosmetic outcome of wounds closed by SIS or RSS.[1,2] However, long-term evaluation is lacking in both studies. In

From the Department of Dermatology, Maastricht University Medical Centre[a]; GROW, School for Oncology and Developmental Biology, Maastricht University Medical Centre[b]; Department of Dermatology, Flevo Hospital Almere[c]; Department of Epidemiology, Care and Public Health Research Institute, School for Public Health and Primary Care, Maastricht University[d]; Department of Cardiology, Maastricht University Medical Centre[e]; Department of Dermatology, Catharina Hospital, Eindhoven[f]; and Department of Plastic Surgery, Maastricht University Medical Centre.[g]

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Correspondence to: Xiaomeng Liu, MD, Department of Dermatology, Maastricht University Medical Centre, P. Debyelaan 25, 6229 HX Maastricht, The Netherlands. E-mail: xmxmliu@gmail.com.

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addition, the occurrence of postoperative complications should also be taken into account when comparing both techniques. Earlier research on wounds following cardiac surgery suggested that RSS was associated with more infections than SIS, although this was not the case in wound healing after appendectomies.[3-5] Literature addressing this topic in dermatologic surgery is not available.

The goal of this study was to compare the long-term aesthetic outcome and incidence of complications of facial wounds closed with SIS and RSS.

CAPSULE SUMMARY

- Simple interrupted and running subcuticular sutures are frequently applied in facial surgery.
- Both methods yield similar cosmetic results at 12 months after surgery. Dysesthesia was more frequent with running subcuticular sutures, although the risk of other postoperative complications was comparable.
- Simple interrupted sutures might be preferred in facial surgery.

METHODS

Patients

This study was a randomized, controlled multicenter trial. Patients were recruited from the Department of Dermatology of the Maastricht University Medical Center, the Department of Dermatology of Catharina Hospital Eindhoven, and the Department of Plastic Surgery of Zuyderland Medical Center in The Netherlands.

Adult patients receiving conventional excision or Mohs micrographic surgery (MMS) on the face with an expected primary closure of a defect >4 mm were approached for participation. One lesion per patient was included. Excluded were patients with tumors located on the ears, nose, eyelids, or mucosal parts of the lips and patients with a history of hypertrophic or keloid scarring. The study protocol conformed to the guidelines of the Declaration of Helsinki and was approved by the Medical Ethical Committee of Maastricht University. All patients gave written informed consent before inclusion.

Patients were randomized into 2 groups: 1 receiving SIS and the other RSS. A computer-generated list, created using random permuted blocks of 6, that was stratified by hospital was used for randomization. The allocation configuration was generated and concealed until interventions were assigned by a secretary not involved in the trial.

Interventions

In all procedures, local anesthesia was achieved with lidocaine hydrochloride 1% and epinephrine 1:100,000. In MMS, additional long-lasting, local anesthesia was achieved with bupivacaine 0.5%. All wounds were sutured in layers; for tension-relieving deep sutures, absorbable, synthetic braided or monofilament material was used. The skin was closed with nonabsorbable monofilament sutures. The brand of suturing material was dependent upon availability at the department. Sutured wounds were supported by adhesive closure strips and a clean pressure dressing. No occlusive dressing was used. Patients were advised to keep the wound dry until suture removal. No antibiotic prophylaxis was prescribed in the studied population.

Both SIS and RSS were removed 1 week after surgery. A high sun protection factor sunscreen (Daylong Actinica, Galderma SA, Lausanne, Switzerland) was offered to all patients that needed to be applied onto the scar daily for 3 months after suture removal to standardize postsurgical cosmetics usage. Patients were advised not to apply any other medication or cosmetics onto the scar. None of the scars received any revision during the 12-month study period.

Outcome measures

The primary outcome in this study was the aesthetic outcome 12 months after surgery as assessed by the overall impression on the Dutch Patient and Observer Scar Assessment Scale (POSAS) version 2.0.[6] Secondary outcome measures were the incidence of complications and scores according to alternative methods for assessment of cosmetic outcome, including the 4-point scale (excellent, good, fair, bad) and measurement with a colorimeter.

The cosmetic result was evaluated at 3 and 12 months after surgery. The patient completed the assessment according to the Patient Scar Assessment Scale (PSAS) and the 4-point scale. A researcher, blinded to the suturing technique, assessed the scars in person by using the Observer Scar Assessment Scale (OSAS) and the 4-point scale.

The PSAS score grades 6 aspects (color, pliability, thickness, relief, itching, and pain) each with a 10-point scale. Assessments with the OSAS were also based on 6 items (vascularity, pigmentation, pliability, thickness, relief, and surface area). Each variable was scored 1-10 with 1 resembling normal skin and 10 the worst scar imaginable. The total PSAS and OSAS scores were calculated by summing the scores for all 6 items. The total score can vary from 6 to 60 with a higher score indicating a worse scar. In

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