

SAUNA-BATHING WITH SUTURES. A PROSPECTIVE AND RANDOMISED STUDY

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ABSTRACT

Background and Aims: Bathing in sauna is a Finnish habit with numerous beliefs and traditions. One belief has been that one is not allowed to go to sauna postoperatively with sutures. This belief is in practically every patient information sheet in Finland on postoperative wound care. There is no scientific proof of the harmfulness of sauna-bathing with sutures and no articles on the matter, either. The aim of this study was to evaluate whether sauna-bathing has a negative impact on wound healing.

Materials and Methods: Prospective, randomised study with 79 patients scheduled for an elective hernioplasty in a day care surgical department. The other group was advised to go to sauna from 3rd postoperative day on, and for the other group, sauna was prohibited until sutures were removed.

Results: There was no differences in wound healing between two groups.

Conclusion: There is no reason to prohibit sauna-bathing with sutures in this patient group.

Key words: Sauna; wound healing; surgery; sutures

INTRODUCTION

It is estimated that there are 1.6 million saunas in Finland. This is a lot for a country of 5.1 million people. Finnish people go to sauna usually once a week, but some people, especially during summer, may bathe even every day. Most saunas are in private houses or summer cottages by a lake. Nowadays sauna stoves are either electric or chimney equipped, which are heated with burning wood. Finnish children are introduced to sauna bathing in early infancy (1). The temperature in the sauna is usually 80-90°C (176-194F) but often exceeds 100°C (212F).

Sauna-bathing has been customary to Finnish people for centuries. There are numerous rituals belonging to sauna-bathing, and for ages it has been a place where various health issues have been treated. Several studies have been published on sauna-related health problems. However, there are no studies on sauna and wound healing. In Finland, it has been a general rule, that one is not allowed to go to sauna after a surgical procedure before the sutures have been removed. It is generally believed, that going to the hot sauna room enhances wound swelling and may predispose to postoperative bleeding. It is also thought that sweating in sauna is not good for the wound. All these reasons together are believed to have a negative impact on wound healing. However, there is no scientific evidence behind this belief. In modern medicine all treatment and aftercare protocols should be based on scientific evidence, and in this matter, it's lacking.

The aim of this study was to evaluate whether there is a difference in wound healing between people who go to sauna with sutures and those who

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TABLE 1
Description of patient groups. Values are presented as mean (range).

	Sauna group	Control Group	Total
N	41	38	79
Female (N)	5	4	9
Male (N)	36	34	70
Age, yrs (range)	50 (19-71)	54 (18-78)	
BMI (kg/m ²)	24,8 (19,2-33,7)	24,8 (20,4-31,4)	
ASA classification (1-5)	1,41	1,49	
Diabetes (N)	1	5	6
Corticosteroids (N)	3	2	5
Operation time / hernia, min (range)	43 (23-92)	45,2 (22-140)	
Recurrent hernias (N)	6	5	11
Bilateral hernioplasty (N)	2	7	9
Mesh-plasty (N)	40	14	54
Time of control visit, days (range)	23 (13-40)	22,4 (10-41)	

don't. The primary hypothesis was, that there is no difference between the two groups.

PATIENTS AND METHODS

With the approval of the local ethics committee, patients who were scheduled for an elective inguinal hernia operation in a day care surgical department, were selected into this study during an 18-month period. Detailed written information of the study was given to each patient before asking for written consent. The operation was performed in spinal anaesthesia and patients were discharged a few hours after the operation. Neither preoperative antibiotics nor any thromboembolic prevention were routinely given. The wound was closed in layers. In all patients absorbable sutures were used subcutaneously and non-absorbable sutures to close the skin. This special patient group was chosen to standardise wound length, anatomic wound location, surgical procedure (hernioplasty) and type (elective) and, at least partly, length of the operation. Patients were preoperatively randomised to either the sauna-group (SG) or the non-sauna group (NSG). All patients were allowed to shower on the first postoperative day. SG patients were advised to go to sauna from the 3rd postoperative day on. Patients kept a diary of the number of visits and the actual time (minutes) spent in the hot sauna room. The type of sauna was noted (electric/chimney equipped). NSG patients were not allowed to go to sauna as long as their sutures were in place. Sutures were removed on the 7th postoperative day by a nurse in the local health centre of each patient. Normally, these patients are not scheduled any control visits to our hospital. However, in this study, all patients visited an outpatient clinic approximately 3 weeks after surgery in order to find also the delayed primary wound healing problems. The wound was assessed by a plastic surgeon. In case of any occurring problems in wound healing prior to control visit, patients were advised to contact the author (AP). The following data was collected: age, sex, body mass index (BMI), anaesthesiological grading according to the ASA classification, medication, operation time (minutes), hernia type (primary, recurrent) and whether a mesh was used for hernioplasty or not. In the control visit wound status was evaluated and classified as follows: 1. uneventful healing, 2. mild secretion of serotic fluid, 3. partial rupture of wound, 4. total rupture of wound, 5. wound inflammation, 6. purulent secretion of wound and 7. given postoperative antibiotic therapy. Also gross haematomas were noted.

RESULTS

A total of 79 patients were included in this study. 41 patients were randomised in the sauna group and 38 in the non-sauna group. Groups are described in Table 1.

There were more mesh-plasties in the SG, more bilateral hernias and diabetics in the NSG. There were 36 electric saunas and 5 chimney equipped saunas. The average number of visits in the hot sauna room in the SG was 3,8 (range 1-12) and the average total time spent in the sauna room was 46,3 minutes (range 3-160).

The clinical status was evaluated in an outpatient clinic at 23 days postoperatively. In the NSG there were haematomas present in two patients: One patient had a haematoma immediately postoperatively and the other patient's haematoma became later. In the SG there were also two haematomas: The first patient, with a large scrotal haematoma, had a spermatocele operation performed simultaneously with the hernioplasty. The other patient's haematoma was evident immediately postoperatively, before going to sauna. None on the patients with haematomas were using anticoagulative medication. Two patients in the SG received antibiotic treatment postoperatively. One patient received it from a local health centre for postoperative scrotal swelling and the other for a mild wound secretion, which lasted for one day. The bacterial culture of the secretion fluid was negative.

DISCUSSION

The main finding of this study was that there was no difference between the two studied groups. Hence, no negative impact on postoperative wound healing could be found in patients who went to the sauna with sutures on place.

Even though sauna-bathing has been customary to Finnish people for centuries some aspects of basic health issues related to sauna are uncovered. The dangers of sauna and alcohol and sauna and coronary heart disease are well documented, but there is no research done concerning sauna and wound heal-

ing. It is obvious that this research must be done in Finland, the homeland of sauna, even though sauna-bathing is getting more and more universal.

In Finnish wound care protocols it has been a rule, that going to sauna is prohibited postoperatively as long as sutures are in place. Wound swelling, postoperative bleeding and the possible negative impact of sweat on wound have been considered risks to wound healing. However, there is no scientific evidence to prove that theory.

In this prospective, randomised study patients were divided into two groups: the sauna group was allowed to go to the hot sauna room from the 3rd postoperative day on. Thus time was given for the wound to stabilise after the operation. All patients were allowed to shower from the first postoperative day. As patient material, patients coming to an elective inguinal hernia operation were selected in order to standardise anatomic location and length of the wound, operative procedure and partly duration of the operation. However, there were some differences between the groups. There were more bilateral hernias and more diabetics in the NSG. Both of these factors could be suspected to be associated with impaired wound healing. It will remain unclear whether wound healing in these patients would have been complicated if they were randomised to the sauna group. In the other hand, most meshplasties were performed to the SG patients without impaired wound healing even though implanted foreign material could be considered a risk for infection.

There were no differences between groups considering wound healing. There were no wound ruptures, no late haematoma formations and no infections in either groups. The patients in the sauna group were actually happy for the opportunity to go to sauna with sutures still on. Neither of the two

haematomas found in the the sauna group at control visit were sauna-related. The first patient had a spermatocele operation performed simultaneously and in the other patient, haematoma was present before going to sauna. Hence, in this material, no late haematomas caused by the hot air in the sauna occurred.

One must be careful in making generalisations after this study. All wounds are not alike. Hernioplasty operation is a rather small operation with a reasonably short incision and is certainly different from a big laparotomy, reconstructive surgery with long or multiple incisions or a big trauma operation with massive postoperative swelling potential. Also, special attention must be addressed to patients who have had an implant operation. However, in this study, all but one patient in the sauna group had a mesh used for hernioplasty and it caused no problems in wound healing. Thus, an implant is not an absolute contraindication for sauna-bathing with sutures. It can be postulated, that patients who can be at home three days after an operation are likely to be able to go to sauna with sutures. This includes small traumatic wounds, wounds after excisions for cutaneous of subcutaneous lesions, scar revisions, and all other wounds where late postoperative swelling is unlikely. In order to give totally new rules considering postsurgical wound care and sauna-bathing, more research must be done in different patient groups.

LITERATURE

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