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Case Report

Keloids of the Lower Abdomen, Mons and Vulva: Several Case Studies Highlighting a Successful Approach to Treatment

Cassandra A Ligh¹, Katherine Magoon² and Paris D Butler^{1*}

¹University of Pennsylvania, Division of Plastic and Reconstructive Surgery, Philadelphia, USA

²Perelman School of Medicine, University of Pennsylvania, Philadelphia, USA

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ABSTRACT

Background: Perineal keloids can have an overwhelming impact on patients' lives including pain, skin breakdown, infection, and interference with intercourse. There is a paucity of literature addressing the effective treatment techniques.

Cases: Three case of perineal keloid treatment, with at least 13-month follow up, are presented. All patients are African American females who were recommended a treatment plan that combined surgical wide local excision and radiation therapy. All patients had aesthetically acceptable outcomes with recurrence-free results at least 13-months post procedure.

Conclusions: These three cases describe the successful treatment of perineal keloids that utilize a combination of surgical excision with targeted radiotherapy. This approach can be offered to patients with recurrent keloidal masses and the presented principles can be utilized to achieve recurrence-free results.

Teaching Points: 1. Readers will understand the basics of the pathophysiology of keloid formation and their effect on patients who experience them in sensitive areas such as the mons, vulva, and/or lower abdomen. 2. Readers will be able to describe and implement the described technique for management of keloids in these potentially sensitive areas.

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Introduction

Keloid formation is abnormal fibro-proliferative growth resulting from chronic inflammation and increased collagen deposition in the reticular dermis that potentiates beyond the original boundaries of a wound [1-3]. Keloids of the perineum are particularly challenging for patients as progression in size can evolve and have overwhelming aesthetic and functional sequelae which include increasing pain, skin breakdown, infection, and interference with intercourse. Once keloids occur, they can be difficult to manage, as there is both a lack of literature on keloids in the perineal area and an inherently high recurrence rate [2]. Increased tension on the involved tissue places patients at higher risk for keloid formation after Cesarean sections, lower abdominal procedures, traumatic injury and even after iatrogenic minor tissue insult [4].

Growths in these socially sensitive and surgically challenging regions are difficult to treat, often reoccur and leave women with large, frequently uncomfortable, keloid scars, while they are still in their reproductive years. Our group has refined an approach to management that has resulted in aesthetically acceptable results with no recurrence. We believe that this paper offers several management principles that when implemented can result in reproducible results without recurrence.

Case Report 1

A 25-year-old African-American female with history of chest keloids from a tattoo needle and right ear keloids status post excision with steroid injection, excision with radiation and recurrence 3 years ago, presented with a 4-year history of multiple pedunculated keloids on the central (11 x 4.5 cm), left (6 x 5 cm), and right (9 x 7 cm) mons pubis as well as the

*Correspondence to: Paris D. Butler, Assistant Professor, Division of Plastic and Reconstructive Surgery, Pennsylvania Hospital, 3400 Civic Center Boulevard, Perelman Center for Advanced Medicine, South Tower, 14th Floor, Philadelphia, PA 19104; Tel: 2155169637; Fax: 2158295350; E-mail: Paris.butler@uphs.upenn.edu

left labia (7 x 6.5 cm) that continue to grow, have become increasingly painful and malodorous. The masses also caused significant psychosocial stress, as they impeded her introitus, making intercourse challenging. The decision was made to excise her lesions in three stages; the first would be addressing the central and left sided masses, the second procedure 6 months later would focus on the right side, and the third procedure 6 months later would address her left flank and groin lesions.

I Intraoperative

The patient was administered general anesthesia, placed supine and frog-legged on the operative table and was widely prepped with Betadine. A mixture of 1% lidocaine with epinephrine 1:100,000 with an equivalent amount of 0.25% bupivacaine was injected in the subcutaneous plane, at the base of the keloids with needle punctures within the keloid and needle aimed towards the edges. This was done to prevent further trauma to the neighboring healthy tissue. Intravenous antibiotics were administered prior to incision.

The keloids were marked with a 3 to 5-millimeter rim of healthy tissue to be removed en bloc. A number 15 blade was used to incise the skin

down to the underlying subcutaneous fat layer and monopolar cautery was used at a blend setting of 35 watts to simultaneously lift the keloidal tissue while coagulating small vessels encountered. The wound bed was then irrigated with normal saline and the edges were undermined using a no superficial skin touch technique implemented to reduce unintended micro-trauma from skin handling. The wounds were closed in a layered fashion: 3-0 vicryl for deep dermis and a running 3-0 prolene for the skin. Prior to dressings, 1 mg of Kenalog 40 was infiltrated beneath the incision in the dermal and subcutaneous planes.

For post-operative dressings, triple antibiotic ointment was applied and covered with Xeroform gauze (non-adherent, sterile, fine mesh gauze impregnated with 3% Bismuth Tribromophenate) then layered with dry gauze and abdominal pads and secured with paper tape. The patient was discharged the same day with 10 days of antibiotics (Duricef 500mg BID) and pain medication as needed. Her second procedure was performed 6 months after her initial case and the right-sided lesions were removed en bloc (9 x 7 cm) and due to increased skin tension on closure, an adjacent tissue rearrangement (11.5 x 7.5 cm) was performed.

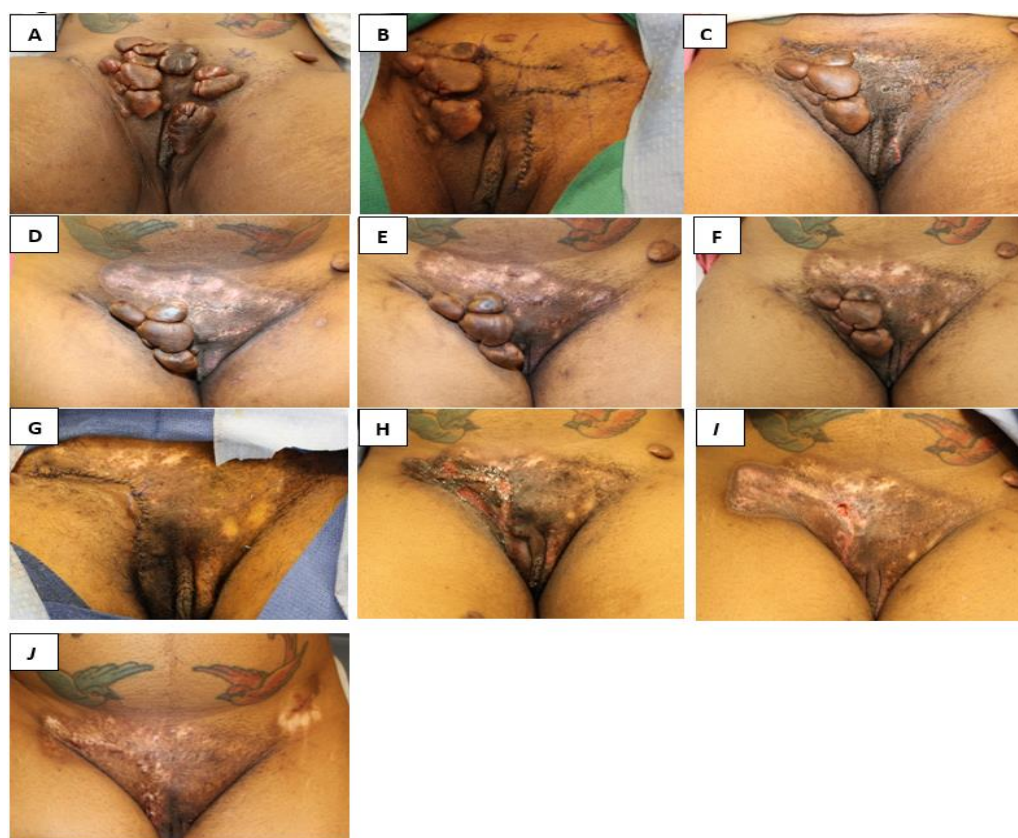


Figure 1: First stage Images of Patient #1 Preoperative (A), Intraoperative first stage (B), 2 weeks postoperative first stage (C), 6 weeks postoperative first stage (D), 12 weeks postoperative first stage (E), 16 weeks postoperative first stage (F), Intraoperative second stage (G), 2 weeks postoperative second stage (H), 5 weeks postoperative second stage (I), 13 months postoperative second stage/18 months postoperative first stage (J).

II Postoperative

Radiation oncology saw the patient on post-operative day 1 and 2, and three total sessions of radiotherapy were administered (total 1650 cGy)

after each of her procedures (cumulative total of six sessions, 3300 cGy). Given the location of the lesion and curvature into the perineum, the radiation technique was quite different that the other two patients described below.

She was treated with a custom surface mold and given a dose of 550 cGy with 9 MeV electrons prescribed to the 90% isodose line during each session. The first two sessions were given on the first day and the third session was on the following day.

The patient was seen in follow-up after the first stage at 2, 6, 8, 12, and 16 weeks and at 2 and 5 weeks after her second stage (Figure 1). At 6 weeks after her first stage, she had a small pinpoint area of wound breakdown adjacent to her perineum that was successfully treated with iodoform packing twice daily. Her second procedure which focused on excising her right sided mons pubis lesions proceeded without issue post operatively. At her most recent appointment, 22-months after her initial procedure, the patient is happy with her aesthetic and functional result with no signs of recurrence in any location.

Case Report 2

A 37-year-old African-American female with history of a Cesarean section with a low Pfannenstiel incision presented to clinic 18 months after an abdominoplasty with rectus plication and liposuction complicated by keloid formation along the length of the abdominal incision (35 x 1.5 cm) and the umbilicus (3.5 x 3 cm). She described severe itching of all keloids with tenderness to palpation of the umbilical keloid but had not pursued any further management of her scarring. She also noted lateral fullness and discomfort when wearing certain clothing caused by her keloid deformity.

I Intraoperative

This patient was surgically treated in the same fashion as the above patient (see above for further details) with the exception that a larger amount of Kenalog was injected beneath the incision (20 mg) and a 3-layer closure was implemented: 2-0 biosyn for Scarpa's fascia, 3-0 biosyn for deep dermal, and 4-0 running prolene on skin. The decision was made to remove her umbilicus at the time of surgery due to the risk of devascularization after resection of keloidal tissue.

II Postoperative

Radiation oncology saw the patient on post-operative day 1, 2, and 3 and three total sessions of radiotherapy were administered (total 1800 cGy). The entire abdominal scar with a 1.5 cm rim was encompassed in a single field and each session included 600 cGy with 6 MeV electrons to the 90% isodose line with a 1 cm bolus.

The patient was seen in clinic at 2, 4, and 10 weeks post-operatively for wound checks and at 14 and 24 weeks post-operatively (Figure 2), steroid injections (2 cc Kenalog 40) were administered at the umbilical site after early signs of recurrence. At her 34 months follow up the patient was happy with her result with no signs of recurrence on her abdominal scar and stable scar at her previous umbilical site (Figure 4).

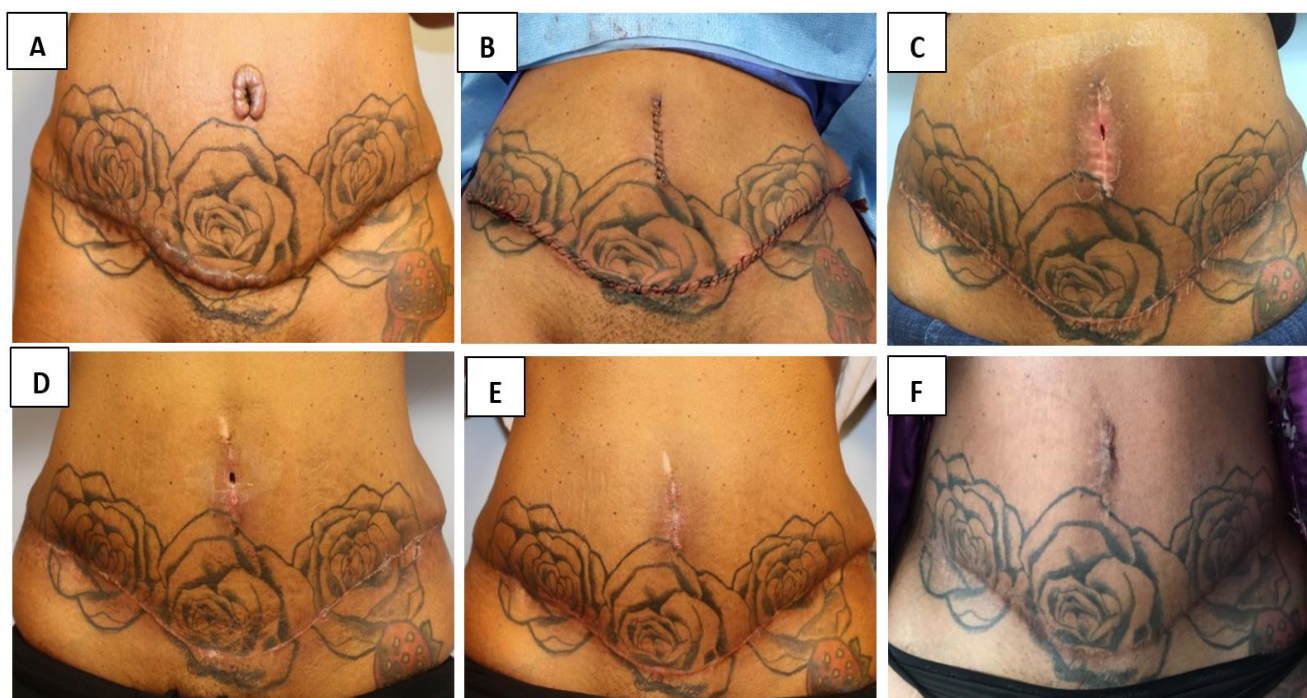


Figure 2: Images of Patient #2 Preoperative (A), Intraoperative (B), 4 weeks postoperative (C), 10 weeks postoperative (D), 14 weeks postoperative (E), 34 months postoperative (F).

Case Report 3

A 37-year-old African-American female with history of three Cesarean sections with low Pfannenstiel incisions presented to clinic with a 5-year

history of recurrent keloid scarring along the central portion of her incision. She notes they have been injected with steroids and excised in the past with recurrence. She describes that her pants continually rub and

irritate her keloids and have become increasingly tender with palpation. Her keloid measured 10 x 3 cm.

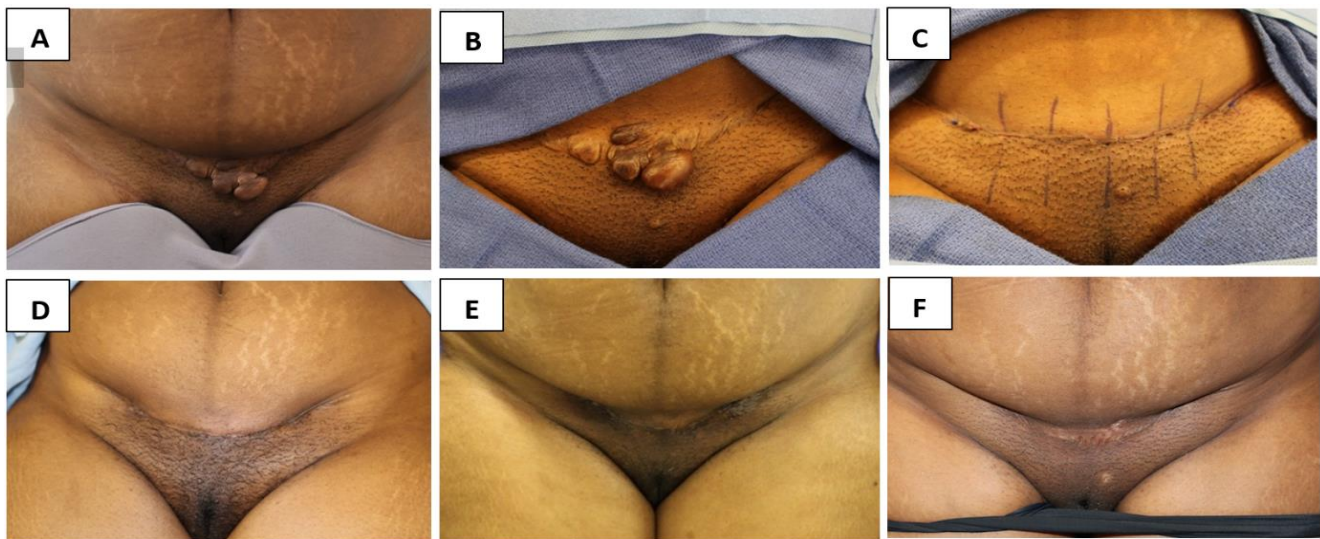


Figure 3: Images of Patient #3 Preoperative (A), Day of surgery (B), Intraoperative (C), 2 weeks postoperative (D), 5 weeks postoperative (E), 13 months postoperative (F).

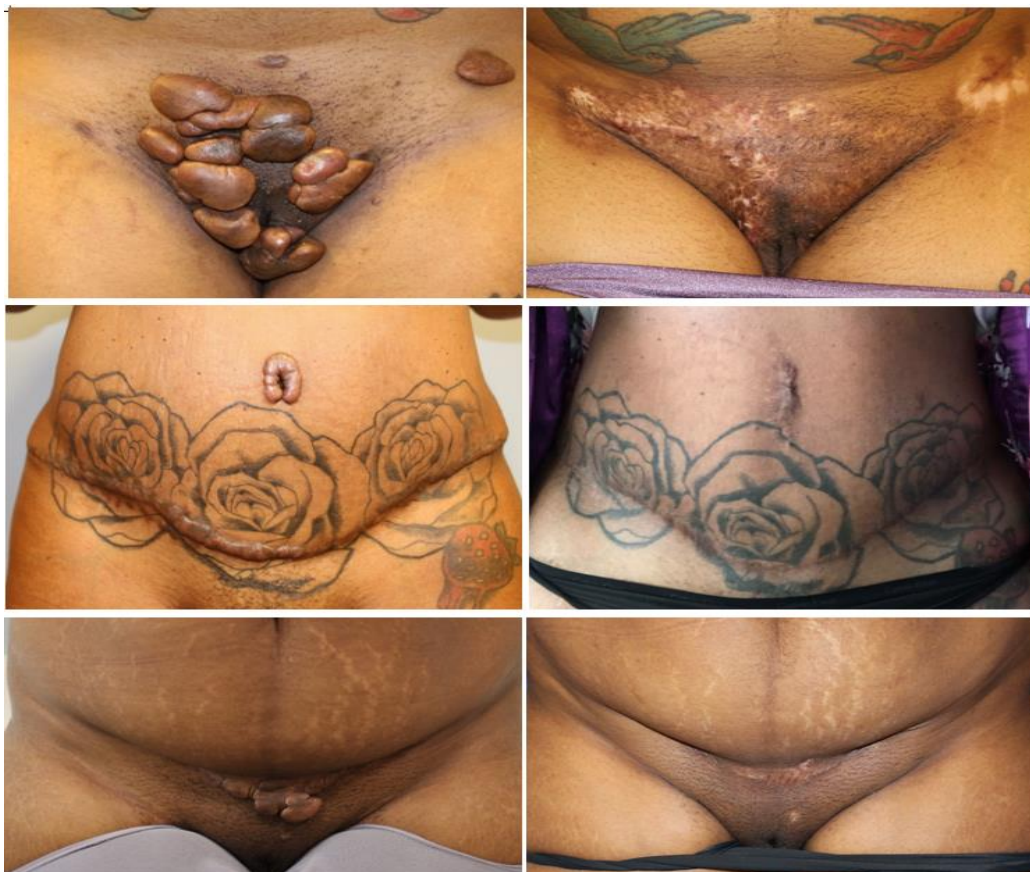


Figure 4: Preoperative (left), ≥ 13 months postoperative (right) photos for Patient #1, 2 and 3 (in order from top to bottom row).

I Intraoperative

The resulting wound (see case report #1 for intraoperative details) necessitated an adjacent tissue transfer of 12 x 3.5 cm in order to reduce

tension on the resultant skin closure. The incision was infiltrated with 3 mL of Kenalog 40 and a running subcuticular 3-0 prolene was used compared to the running continuous external sutures in the previous cases.

II Postoperative

Radiation oncology saw the patient on post-operative day 1, 2, and 3, and three total sessions of radiotherapy were administered (total 1800 cGy). She was treated with a custom cutout with a 1.8 cm margin around the scar and was treated in 2 fields total. Each session 600 cGy were given with 9 MeV electrons prescribed to the 90% isodose line. The patient was seen in clinic at 2, 5, and 8 weeks post-operatively for wound checks and at the most recent appointment at 13 months, the patient was very happy with her result with no signs of recurrence on her abdominal scar (Figures 3 & 4).

Discussion

Management of keloids has been portrayed in the literature as challenging because of the high risk of recurrence [5, 6]. Perineal keloids pose a particularly difficult challenge as there are only two published studies that describe attempts at management of keloids in either of these locations [2, 4, 7]. The goal of this paper is to describe the senior author's evolving approach to treatment. We hope that by following these logical principles of treatment, the management of perineal keloids will no longer seem as daunting as they have in the past. For those with recurrent keloid scarring, collaboration with radiation oncology is ideal. While considered by some as an aggressive approach to management, the senior author believes re-excision of keloids is more challenging [8]. As recurrent keloids must be continually re-excised, additional healthy tissue must also be removed, which poses a particular challenge when closing the wound without skin tension. The radiation oncologists at our institution individualized a 3-session radiotherapy protocol during post-operative day 1-3 catered to effectively treat these keloids, while making it as safe as possible for patients.

Prior to the surgical procedure, the patient works with the radiation oncology team to determine if the patient has any contraindications to radiotherapy in addition to discussing the treatment options and the role of radiotherapy. The rationale for radiation therapy is described, as it decreases the likelihood of local recurrence of the keloids to less than 10%. They also discuss any risks. Patients are not shaved prior to incision but are prepped extensively with Betadine. This is to prevent micro-trauma that has been shown to result in keloids [9]. This same principle is applied with the no superficial skin touch technique that is used during closure. During closure of the wounds, the senior author ensures to avoid picking up the superficial skin, and instead uses pickups to grasp the deeper tissues. The rationale is that this technique reduces the risk of unintended trauma to the superficial skin that could result in keloid scarring.

The goal is a tension-free closure of tissues, which is why a 3-layer closure is implemented as often as the tissue will provide. The senior author has used both Monocryl and Vicryl sutures for deeper layers and does not have a strong preference for one in particular, but the placement is specific at the deepest portion of the dermal layers, at the

dermal/subcutaneous fat interface. Non-absorbable sutures such as prolene are used either within the subcuticular layer or run continuously on the outside of the skin. Kenalog is always infiltrated around the edges prior to closure as to prevent new needle marks on the non-traumatized skin. The amount injected depends on the length of the incision.

Patients are advised to use non-fragrance soap and water daily to the incisions, ensuring no aggressive scrubbing to the areas and no soaking in tubs or pools for 6 weeks. Triple antibiotic ointment and dry dressings are applied twice daily. Patients are instructed to avoid lifting greater than 10 pounds and avoid jogging for 4 weeks. All patients are prescribed 10 days of an oral antibiotic and are given a small prescription for narcotic pain medication, with careful advisement to transition to non-narcotics after the first couple of days post-operatively, to tolerance. These cases demonstrate three presentations of keloids of the perineum and lower abdomen, which were treated with surgical excision in addition to 3 sessions of individualized post-operative radiotherapy and have not shown recurrence of disease. These principles have proven to be essential for management of perineal keloids. We hope that these cases encourage clinicians that disease-free results are attainable.

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REFERENCES

1. Huang C, Murphy GF, Akaishi S, Ogawa R (2013) Keloids and hypertrophic scars: update and future directions. *Plast Reconstr Surg Glob Open* 1: e25. [\[Crossref\]](#)
2. Jones K, Fuller CD, Luh JY, Childs CC, Miller AR et al. (2006) Case report and summary of literature: giant perineal keloids treated with post-excisional radiotherapy. *BMC Dermatol* 6: 7. [\[Crossref\]](#)
3. Butler PD, Longaker MT, Yang GP (2008) Current progress in keloid research and treatment. *J Am Coll Surg* 206: 731-741. [\[Crossref\]](#)
4. Kim J, Lee SH (2012) Therapeutic results and safety of postoperative radiotherapy for keloid after repeated Cesarean section in immediate postpartum period. *Radiat Oncol J* 30: 49-52. [\[Crossref\]](#)
5. Lutendorf MA, Adriano EM, Taylor BJ (2011) Prevention and management of keloid scars. *Obstet Gynecol* 118: 351-356. [\[Crossref\]](#)
6. Sidle DM, Kim H (2011) Keloids: prevention and management. *Facial Plast Surg Clin North Am* 19: 505-515. [\[Crossref\]](#)
7. Alkim C, Benbadis L, Yilmaz U, Cakar ZP, Francois JM (2013) Mechanisms other than activation of the iron regulon account for the hyper-resistance to cobalt of a *Saccharomyces cerevisiae* strain obtained by evolutionary engineering. *Metallomics* 5: 1043-1060. [\[Crossref\]](#)
8. Botwood N, Lewanski C, Lowdell C (1999) The risks of treating keloids with radiotherapy. *Br J Radiol* 72: 1222-1224. [\[Crossref\]](#)
9. Kelly AP (2009) Update on the management of keloids. *Semin Cutan Med Surg* 28: 71-76. [\[Crossref\]](#)