

Purpose & Literature Review

Digital mucoïd cysts are slow-growing, well-localized cutaneous lesions that present as burning, itching or painful sensations exacerbated by palpation. [1] The etiology of mucoïd cysts is due to herniation of a digital tendon sheath resulting in a stock-like connection from a joint. This causes the transfer of mucin leading to the formation of a cyst. [2] Treatment options for mucoïd cysts range from puncture and drainage to soft tissue and bone resection which result in varying degrees of recurrence. [3] Adjunctive techniques incorporating transpositional flaps after cyst resection may minimize the recurrence rate of mucoïd cyst re-formation.

The use of a transpositional kite flap, also known as a rhomboid flap or a Limberg flap, was first described by Limberg in 1963 (Figure 1) [4] and has been utilized for varying purposes including tumor excision [5], pilonidal sinus disease [6] and facial reconstruction [7], however, its use in foot and ankle procedures is poorly documented. This case study details the use of a transpositional kite flap to address a mucoïd cyst found on the 3rd right toe and the subsequent follow up.

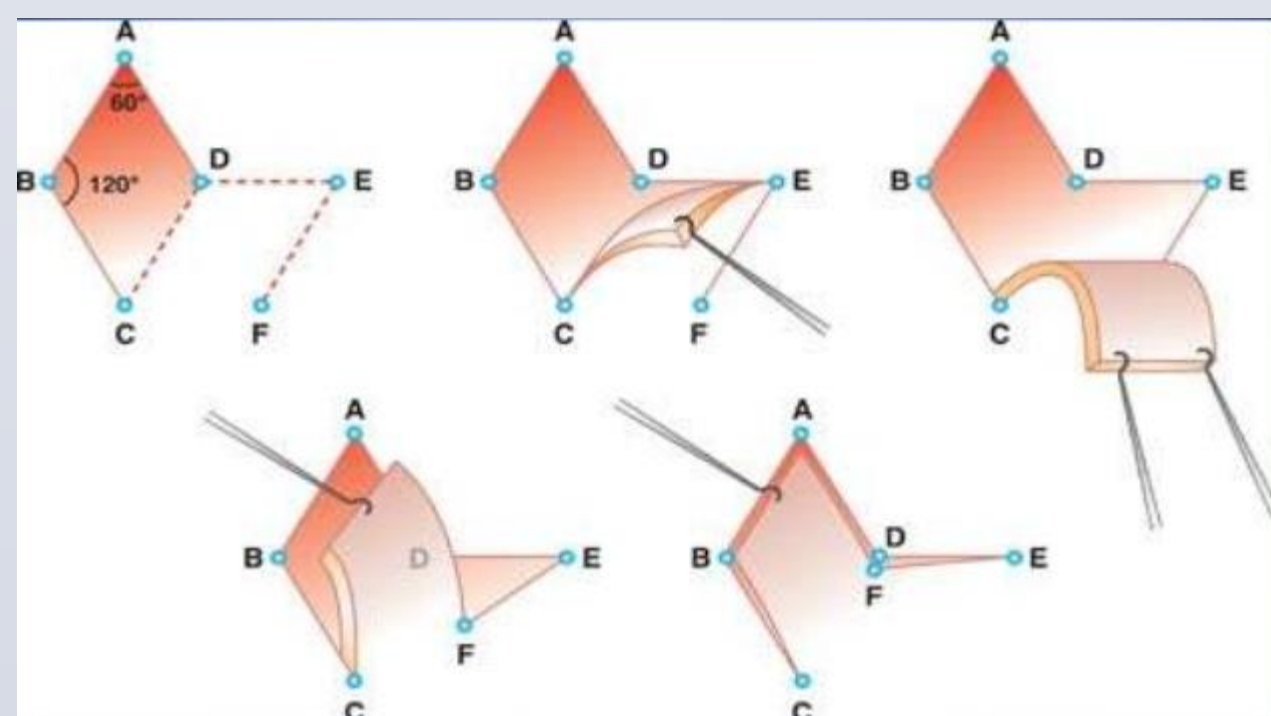


Figure 1: Transpositional Kite Flap as described by Limberg in 1963

Methodology

The patient is a 36 year old male who initially presented with a chief complaint of pain in right 3rd toe at the level of the medial distal interphalangeal joint (DIPJ) due to a mucoïd cyst. (Figure 2) The patient had exhausted all conservative options and had opted for elective surgery to excise the mucoïd cyst. Following surgery, the surgical site appeared well healed with no signs of recurrence of the mucoïd cyst in the right 3rd toe.

Procedure

A #15 blade was used to make a diamond shaped excision incision deep to the subcutaneous tissue layer where the cyst was excised in total in a full-thickness manner. (Figure 3) A beaver blade was then used to incise a flap that would be used to cover the deficit and the 3rd digit. (Figure 4) An approximately 1cm incision was placed starting at the proximal most point of the diamond, extending nearly proximally. Another 1cm oblique tail was added to this incision, extending laterally and distally at a 45 degree angle. These incisions were made with a beaver blade in a full-thickness manner past the subcutaneous tissue layer. The surrounding tissue was undermined with a dull tenotomy scissor both at the site of the flap and around the incisional diamond incision to ensure elasticity of all tissue that would be involved in the flap would be most optimal. Once the flap was fully freed and elasticity of the surrounding tissue was at the most ideal level, the flap was advanced into the void left by the resection and the mucoïd cyst, fully covering the area. (Figure 5) All significant apex points were moved into proper positioning and sutured down first with 4-0 nylon in a simple interrupted fashion. A few deep stitches were thrown in the subcutaneous tissue layer utilizing 4-0 vicryl in a subcutaneous horizontal mattress type fashion to reduce tension at the site of the flap. Lastly, skin edges around the border of the flap were reapproximated and closed utilizing 4-0 nylon in a simple interrupted fashion. (Figure 6) The entire flap was able to cover the void entirely, and upon inspection there was minimal tension and pulling to the flap. The lower extremity was then cleaned and dried and dressed.



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7

Results

The official pathology report from our institution confirmed the soft tissue resected from the third right toe was a mucoïd cyst. Thorough removal of the mucoïd cyst with adequate flap coverage was evidenced in subsequent follow-up post-operative visits showing no signs of necrosis or recurrence of the mucoïd cyst at the site of surgery even a year after surgery, as well as adequate flap healing, and intact gross sensation

Discussions

Current treatments of mucoïd cysts are not always curative. While aggressive treatments such as excision of soft tissue and bone result in the lowest rate of recurrence (20%), the adjunctive use of a transpositional kite flap can reduce the recurrence rate to <5%. [3] This reduction may be due to improved anterograde blood flow. Another advantage of transpositional flaps include less undermining as compared to large sliding flaps and the superior ability to displace tension away from the defect and from free margins. [3,8] Also, because of a better cosmetic effect, clinicians treating chronic, recurrent mucoïd cysts should consider the use of excision with transpositional flap to achieve a more definitive repair with better healing.

Resources

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There is no financial conflicts of interest to disclose.