



Use of a novel RADA-16 self-assembling peptide, in a Draf-III frontal sinusotomy

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Abstract

Introduction: The Draf-III frontal sinusotomy, or endoscopic modified Lothrop procedure (EMLP) is an established technique useful for severe sinonasal diseases or tumors. Stenosis and adhesions after a Draf-III are well-known complications and various techniques have been proposed to maintain patency. No technique has been proven to be superior. RADA-16 hydrogel is a self-assembling synthetic peptide that has been shown to promote wound healing and prevent adhesive formation. RADA-16 has been studied in animal models, which have shown wound healing and tissue regeneration properties through the creation of an extracellular matrix, but there's a paucity of described applications in patients. Presently, there are no reports of RADA-16 utilization in a Draf-III frontal sinusotomy. We report the two successful cases of the use of RADA-16 to promote healing after Draf-III frontal sinusotomy during revision sinus surgery.

Cases: A 59 yo F with aspirin-exacerbated respiratory disease presented with recurrent polyps. A revision sinus surgery was performed with a Draf-III using RADA-16 and a steroid eluting stent in the Draf-III cavity. At 3 week postop, there was no exposed bone and the cavity remained widely open with minimum debridement. Cavity remains widely open at 1 year followup. A 62 yo M with recurrent nasal polyps who had prior sinus surgery with recurrent polyps. He underwent a Draf-III and RADA-16 and silastic stent was placed. The silastic stent was removed at 2 weeks postop. No exposed bone was seen and the cavity remained widely open. At 5 months followup, the Draf-III cavity remained open.

Conclusion: We present the first described cases of using a RADA-16 to promote wound healing after a Draf-III in combination with both dissolvable and nondissolvable stents. This technique can be helpful in accelerating mucosalization of denuded bone during sinus surgery

Introduction

- The Draf-III frontal sinusotomy, or endoscopic modified Lothrop procedure (EMLP) is a well-described technique useful for symptom reduction sinonasal disease involving the frontal sinuses. The 10-year success rate has been reported as high as 95% (Naidoo et. al), with restenosis being the most common postoperative complication (Georgalas et. al).
- RADA-16 is a self-assembling peptide which has been shown to promote wound healing and prevents adhesion formation.
- RADA-16 has been used in endoscopic sinus surgery to prevent nasopharyngeal/palatal restenosis in a radiated field (Wong et. al). Other studies demonstrated RADA-16 utilization to prevent rebleeding or adhesions after FESS and turbinate reduction (Lee et. al, Friedman et al).
- Here, we report the two novel and successful cases of RADA-16 placement in a Draf-III frontal sinusotomy.

Case Series

Case 1:

Our first patient was a 59-year-old female with history of Samter's triad with chronic rhinosinusitis (CRS) and aspirin-exacerbated respiratory disease (AERD) who presented with recurrent nasal polyps involving all the sinuses. A revision FESS was performed with Draf-III frontal sinusotomy. RADA-16 and a steroid eluting stent was placed to prevent stenosis. At 1 week postoperative visit, there was granulation tissue in the wound bed with no re-stenosis of the cavity. She continues to do well 1 year postoperative.

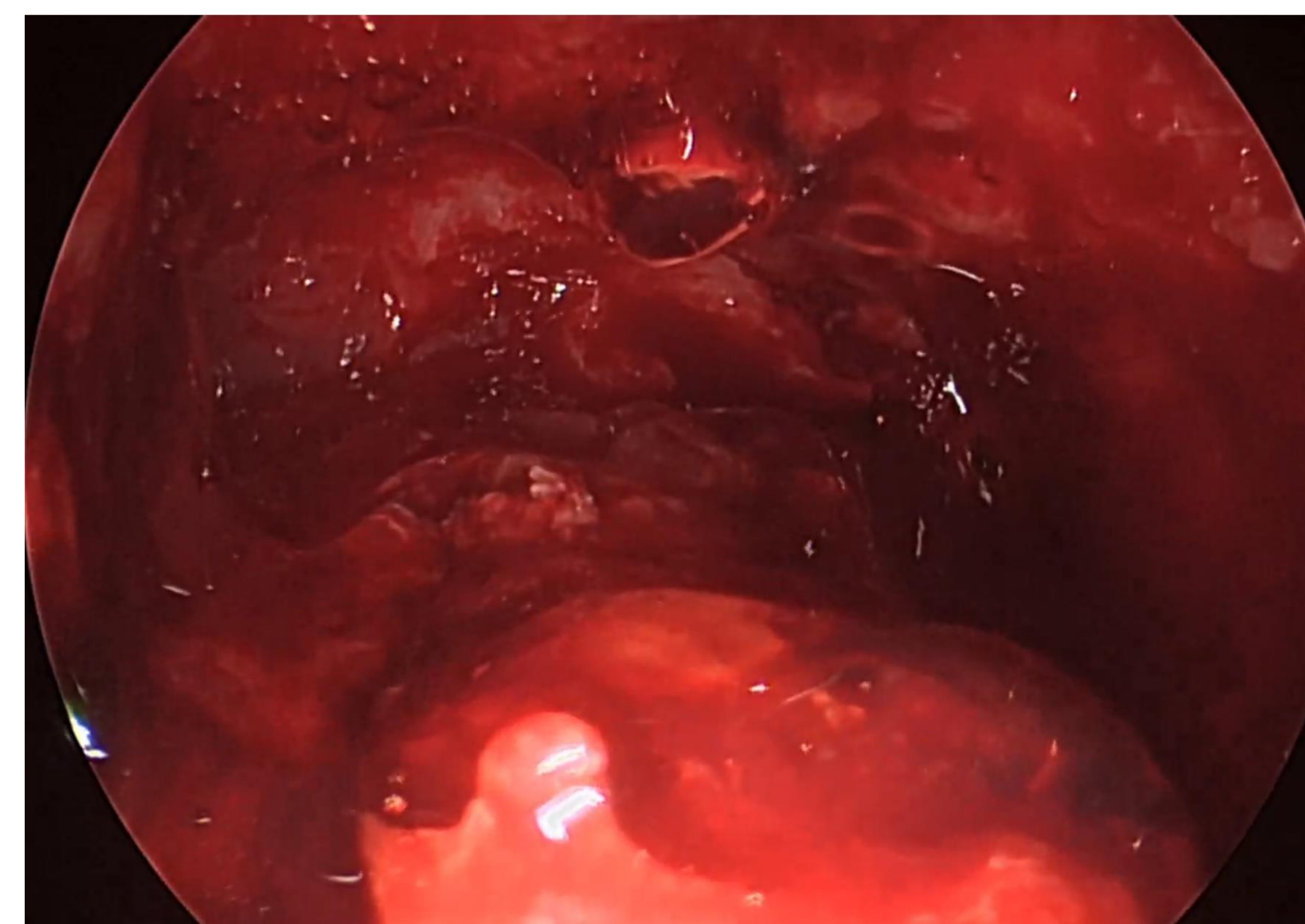


Figure 1: Draf-III cavity with a thin lining of RADA-16 along the areas of exposed bone.



Figure 2: 1 week postoperative view of Draf-III cavity showing granulation tissue and no re-stenosis.

Case Series

Case 2:

The second patient was a 64-year-old male with history of CRS refractory to prior sinus surgery. A revision FESS was performed with a Draf-III frontal sinusotomy. Rada-16 and a Liberty bell silastic stent was placed. The silastic stent was removed at 2 week and there was granulation tissue without stenosis of the frontal sinusotomy. At the 1-month post-operative visit, there was notable recurrence of polyps likely secondary to upper respiratory and sinus infection, which responded to systemic steroids and antibiotics. Patient continued to be progressing well at the 5 month post-operative visit with an open Draf-III cavity

Discussion

- Restenosis and adhesion formation after any sinus surgery is a difficult post-operative complication as it often requires procedural intervention
- Optimizing the post-surgical field with space-filling packing and/or hemostatic agents aids in preventing excessive crusting, inflammation, and scarring, which can cause restenosis of the expanded sinus opening
- Patient compliance and routine follow-up with debridement also aid in preventing restenosis
- RADA-16 is a novel self-assembling peptide shown to improve wound healing on the exposed bone after a Draf-III frontal sinusotomy
- Friedman et. al reported one of the larger reviews of 94 patients who underwent FESS with RADA-16 placement. Adhesion formation was noted in 24.47% of their cohort, none of which involved the frontal sinusotomy
- Our two cases specifically emphasize the utility of RADA-16 in Draf III frontal sinusotomies

Conclusion

- The most common post-operative complication in Draf-III frontal sinusotomy is restenosis.
- Our case experience suggests that RADA-16 is a promising, novel product to promote wound healing after a Draf-III frontal sinusotomy.

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Financial Disclosures:

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