Artelon® FLEXIBLE HEALING

CLINICAL CASE STUDY
SUPERIOR PERONEAL RETINACULUM RECONSTRUCTION UTILIZING ARTELON® MATRIX

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TECHNOLOGY OVERVIEW

Artelon is a Dynamic Matrix™ for tendon and ligament reconstruction. It mimics the body's natural healing matrices to create repairs that are both strong and highly elastic.[1] These features have been proven[2,3,4] to:

- **Restore** kinematics
- **Resist** failure from necrosis
- **Regenerate** native tissue through load sharing

Artelon is extremely inert, and less reactive than common biomaterials such as titanium, polystyrene and suture.[5] It integrates into the repair site and scaffolds new tissue growth. Its high compliance permits load sharing, which stimulates rapid tissue remodeling through mechanotransduction.[6] Artelon maintains its properties for five years, then dissolves in water and is eliminated from the body.

The current case involves a patient with recurrent peroneal tendon dislocation.

CLINICAL HISTORY

A 24-year-old healthy female presented with retromalleolar ankle pain. The patient had a history of 2 prior surgeries for peroneal tendon instability, including a fibula groove deepening 3yrs prior. Recently she felt her peroneal tendons dislocate and spontaneously reduce. Physical exam revealed retromalleolar swelling and tenderness to palpation with peroneal subluxation with circumduction. Furthermore, anterior drawer and talar tilt tests revealed solid endpoint without significant laxity and normal alignment was noted with weightbearing.

Weightbearing radiographs showed no pathological bone lesions, fractures, or degenerative changes. MRI evaluation revealed a lateral position of the peroneal tendons with tenosynovitis. The patient was initially treated with 6 weeks of casting and several weeks of bracing/physical therapy. However, peroneal instability and pain continued and surgical treatment was recommended.

INTRAOPERATIVE FINDINGS:

Examination under anesthesia revealed gross peroneal tendon dislocation with circumduction and when anterior pressure was applied to the tendons in the retromalleolar region. Intraoperatively, the superior peroneal retinaculum (SPR) was avulsed from its fibula attachment. The SPR was thin and attenuated. Due to its poor tissue quality, an Artelon FlexBand™ was utilized to reconstruct the SPR.

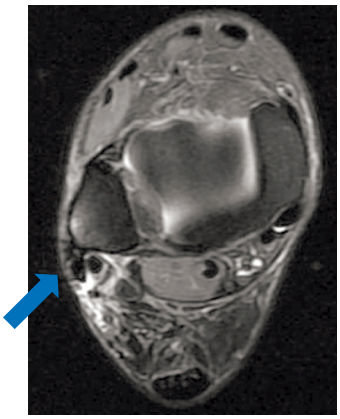

FIGURE 1: MRI image demonstrating lateral position of peroneal tendons with tenosynovitis

FIGURE 2: Peroneal dislocation with anterior pressure applied to the tendons

FIGURE 3: Planned surgical incision along course of peroneal tendons

FIGURE 4: Exposure of the SPR. The SPR was avulsed from its fibula attachment and very thin and attenuated

References
1. Data on File
2. Gretzer et al, J. Biomater. Sci. Polymer Edn, Vol. 17, No. 6, pp. 669-687 (2006)
3. Galloway et al, J Bone Joint Surg Am. 2013;95:1620-8
4. Data on File
5. Liljensten et al, J. Biomater. Sci: Materials in Medicine 13 (2002) 351-359

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SURGICAL INTERVENTION

An incision was made in the retromalleolar region over the peroneal tendons and extended distally *(Figure 3)*. The sural nerve was encountered and protected. The SPR was identified and found to be avulsed from its fibula attachment. Its tissue was very thin and attenuated *(Figure 4)*. The SPR was incised and peroneal tendons were identified. No peroneal tear was present (Figure 5). The fibula groove was identified and a revision groove deepening was performed *(Figure 6)*. Finally, the SPR reconstruction was performed. The SPR was repaired back to its fibula attachment with the tendons located *(Figure 7)*. Next, the Artelon Flexband was utilized. A suture anchor was place into the posterolateral aspect of the fibula at the SPR attachment *(Figure 8)*, and a 0.5 x 8cm FlexBand was attached *(Figure 9)*. A second suture anchor was placed at the calcaneal attachment of the SPR *(Figure 10)*. The unattached end of the Artelon FlexBand was tensioned and secured directly to the lateral calcaneal attachment of the SPR. *(Figure 11)*. Incision was closed in a routine manner and the foot was splinted in a neutral position.

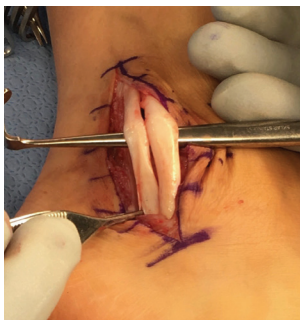

FIGURE 5:
Peroneal tendons were intact withouttearing.

FIGURE 6:
Fibula groove deepening

FIGURE 7:
SPR repaired to its fibula attachment

FIGURE 8:
A suture anchor placed into the posterolateral aspect of the fibula at the SRP attachment

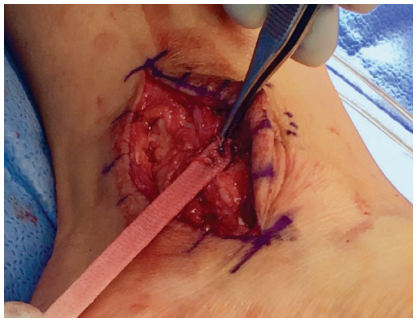

FIGURE 9:
A 0.5 x 8cm FlexBand secured to the fibula

FIGURE 10:
A second suture anchor placed at the calcaneal attachment of the SPR

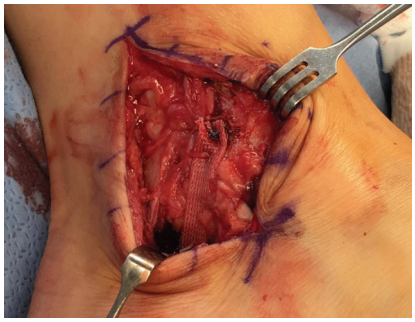

FIGURE 11:
The unattached end of the Artelon FlexBand tensioned and secured directly to the lateral calcaneal attachment of the SPR

FOLLOW UP

The patient's incision healed uneventfully. She was placed in a nonweightbearing short leg cast at her first postoperative appointment. Weightbearing in a CAM boot and active dorsiflexion and plantar flexion exercises were initiated at 3 weeks postop. Formal physical therapy was initiated at 6 weeks postop. The patient continued to rehab well and was out of the boot at 9 weeks. At 3 months, the patient had minimal swelling along the peroneals, a full range of motion, and no evidence of residual instability. She was released to full activity at that time.

CONCLUSION

This 24-year-old female with chronic, recurrent peroneal tendon instability underwent a successful SPR reconstruction augmented with Artelon's FlexBand device. Through the procedure, we achieved a strong and reliable repair. Ligament reconstruction supported by Artelon's dynamic matrix technology is safe, effective, and has the capability of supporting patients in an early return to activity.

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