CASE STUDY

Surgical Repair of a Subluxed Tibia/Fibula Fracture Utilizing Low-Profile Locking Plate

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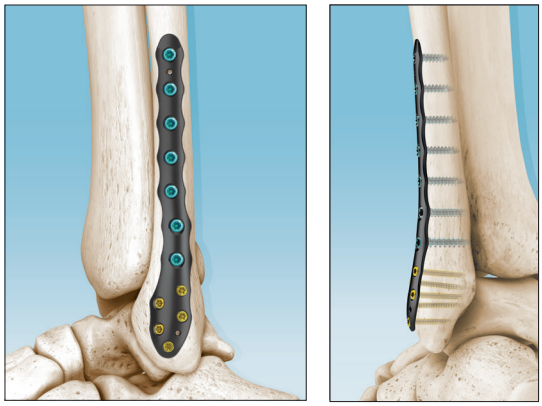

CoLink® Afx
Lateral Fibula Plate

In2Bones

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INTRODUCTION

A 73-year-old female presented to my office eight days following an acute injury to the right ankle. While on vacation, she tripped on the bottom two steps in the home where she was staying. She reported to me that she had "some pain" initially, but as the day progressed, the pain subsided. However, she did mention that the entire area around the right ankle began to bruise, and there was "some" swelling. She decided to stay and finish her vacation while limping on her injured right foot and ankle.

When she presented to the office, the right foot and ankle were substantially swollen. There was no apparent gross deformity. First concern was the neuro-vascular status which was found to be intact. Vascular compromise as a result of significant trauma is not uncommon, but in this case, it was not an issue. All attempts at examining the right foot and ankle were met with significant resistance. There was "guarding" noted immediately, which was a potential indication to the extent of the trauma she sustained.

X-rays were taken of the foot and the ankle. Immediately noted was the tremendous damage to the integrity of the ankle joint. At the time of her fall, she sustained a fracture to the fibula, the tibia, and subluxation of the ankle joint. Also, there likely was a complete disruption to the ligamentous structures as well, including the syndesmotic ligament. (**Figure 1**)

Once the x-rays were in hand, a surgical plan evolved. An attempt would be made to close reduce the fractures under C-arm fluoroscopy and then based on that success, or failure, the fractures would be stabilized and fixated.

Figure 1. Pre-op X-ray

PROCEDURE

The patient was brought to the operating room and positioned on the operating table. Anesthesia was started, and the patient was induced. Using C-arm fluoroscopy, the ankle fracture was evaluated once again before the surgery commenced. One more attempt was made to close reduce the fracture and place the fragments into a more anatomical alignment.

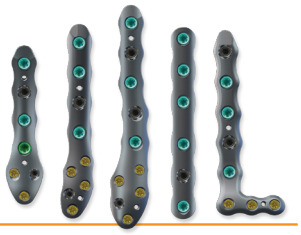
The lower extremity was prepped and draped, then elevated, prior to inflation of the thigh tourniquet. In addition, bone marrow aspirate was taken from the anterior superior iliac spine in order to harvest stem cells and PRP to be used at the fracture sites. Once the tourniquet was inflated, the leg was repositioned and the surgery commenced.

The first step was to repair the tibial fracture. The decision was made to use the percutaneous, CoLag® screw fixation instead of a plate based on the amount pre-operative reduction achieved.

Figure 2: CoLag®

Utilizing the C-arm, a guide pin was placed across the fracture site from the medial malleolus into the body of the tibia. Care was taken to not penetrate the lateral cortex of the tibia in order to give a more accurate measurement for

Figure 3



the screw. (**Figure 3**) The pin was measured and the hole was drilled and countersunk. A small stab incision was made in order to place the screw. The screw was selected, inserted and tightened. (**Figure 4**)

Attention was then directed to the lateral side of the ankle where a 12 cm incision was made extending from the tip of the fibular malleolus proximally. The incision was deepened and the bone fragments were identified and visualized. Utilizing temporary fixation, the fragments were re-aligned and pinned into position.

Utilizing the plate trials, I determined the appropriate CoLink® Afx Lateral Fibula Plate (**Figure 5**). The corresponding sterile plate was then fixated to the fibula using olive wires for temporary fixation. Utilizing the threaded drill guide, each hole in the plate was drilled and measured followed by the insertion of the proper size screw. To stabilize the ankle and the syndesmotic tear, a suture button was placed through the plate and into the tibia.

A final image was taken to ensure that the fractures had adequately been reduced, and stabilized. Once that was determined, the incisions were closed. (**Figure 6**) Local anesthesia, stem cells, and PRP was injected. The ankle was bandaged and the tourniquet was released. A large dressing was applied. A short leg, cast was applied and the patient was transferred to the recovery room for monitoring.

Figure 5: CoLink® Afx Lateral Fibula Plate

Figure 4

Discussion

Historically, ankle fracture surgical repair has been fraught with frustration; mostly due to the poor contour of the plates available, and the long-term lack of purchase of the screws. I believe the In2Bones' CoLink® Afx Lateral Fibula Plate has addressed both of those issues. The thin plate profile makes contouring unnecessary in most cases. I no longer need to bring in plate bending irons to achieve "the right fit". With the CoLink® Afx system, the plate continues to contour to the bone as the screws are tightened. Also, these plates are very low profile which greatly reduces the need for hardware removal. This advance in technology minimizes the chances for SSI (Surgical site infection) by eliminating a second surgery. Advancement to this is the variable axis ability for the delivery of this technology. This feature enhances the ability to have tight screws and purchase across the fracture line.

The CoLag® screws have been a huge advancement in percutaneous fixation to the tibial side of the fracture. The thread pitch on the screw is very effective in providing maximum compression at the fracture line. The low-profile head allows the skin and subcutaneous tissue to cover the screw without feeling prominent, thereby reducing subsequent hardware removal.

Another advantage of using In2Bones' CoLink® Afx Ankle Fracture System is the individually packaged, sterilized, implants. By delivering the screws an plates in this format, it eliminates the need and costs involved with sterilizing trays, missing equipment, and surgical delays. This translates into cost savings and efficiencies for both the surgical staff and surgeon.

Figure 6: Post-op X-ray

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