

5th Rib Osteotomy Repair using BioBridge® Resorbable Chest Wall Stabilization Plates

Product Used: BioBridge® Resorbable Chest Wall Stabilization Plates

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Facility Name/ Location: Emory University Hospital Midtown, Atlanta, GA

Case Date: October 26, 2010

Indication Used for Repair: 5th Rib Osteotomy Repair

Patient History -

The patient is a 69 year old male who presented with a non-ST segment elevation MI. EKG findings suggested inferior wall ischemia. His past history is significant for coronary artery disease. Two years ago he underwent percutaneous coronary intervention with a bare metal stent placed in the proximal left anterior descending coronary artery. He was taken urgently to the cardiac catheterization lab which revealed a critical 95% proximal lesion in the right coronary artery. Additional findings included LAD occlusion at the site of the previously placed stent in the LAD. Furthermore, a large diagonal vessel just proximal to the site of LAD occlusion had a significant lesion as well. His coronary anatomy was suitable for a hybrid revascularization approach with planned drug-eluting stent placement to the right coronary artery followed by a minimally-invasive coronary artery bypass procedure utilizing the left internal mammary artery to the left anterior descending coronary artery. This would be followed by an additional drug-eluting stent to be placed into the diagonal vessel.

Treatment -

After placement of a drug-eluting stent to the right coronary artery, he was allowed to recover from his non-ST segment elevation MI. He was then taken to the operating room 3 days later for a robotic-assisted coronary artery bypass procedure utilizing the left internal mammary artery to the left anterior

descending coronary artery. After robotic mammary artery harvest and pericardiectomy, the endoscope was used to localize the site for the skin incision to be made directly over the left anterior descending coronary artery. A 3cm anterolateral thoracotomy incision was then made over the planned site of anastomosis. Initially, the intercostal space below the 5th rib was entered. This revealed that the left anterior descending in the distal portion was diffusely diseased and too small for grafting near the apex. Subsequently, the intercostals space above the 5th rib was entered which revealed heavy calcification of the artery in this region. The most suitable portion of the artery for bypass grafting was immediately beneath the 5th rib. Therefore, the 5th rib was divided using a rib cutter. This provided optimal exposure of the artery to allow for an anastomosis to be performed.

Stabilization -

After completion of the anastomosis, the 5th rib was repaired using a BioBridge device. The BioBridge was carefully sized to allow for 2 eyelets of the BioBridge to be positioned on the sternal side of the 5th rib and 3 eyelets to be positioned over the lateral aspect of the 5th rib. Using the eyelets as a guide, a #1 PDS suture was placed through a pair of eyelets on either side of the fracture site and subsequently through the 5th rib. These were cut and then tagged with a hemostat. An additional PDS suture was placed on either side of the fracture around the rib so that the suture would lie in the suture guides of the BioBridge device. After all 4

Stabilization (cont.) -

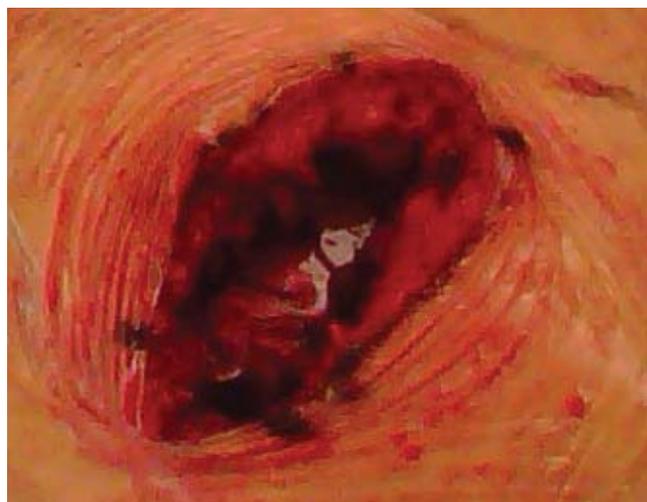
sutures were cut and tagged, the assistant held the BioBridge device in place with fixation of the 5th rib fracture while the surgeon tied all of the sutures down. After testing for stability of the repair, the pectoralis major muscle was re-approximated over the repair. Additional sutures may be placed in the suture guides or through the BioBridge eyelets if necessary to achieve a more stable repair. The subcutaneous suture and skin were then closed in the standard fashion. After completion of the surgical portion of the procedure, interventional cardiology performed a diagnostic cath to confirm left internal mammary artery to left anterior descending coronary artery patency as well as drug-eluting stent placement to the diagonal vessel. The patient was extubated in the operating room and discharged to home on postoperative day 3.

Follow Up -

On the 1st-3rd postoperative days, pain control was excellent with oral analgesics. Furthermore, on physical exam the chest wall was completely stable with no mobility over the rib repair site. Chest x-ray confirmed re-approximation of the 5th rib. On week 2, follow-up, the patient had resumed all normal preoperative activity including driving, regular exercise with gradual return to upper body exercise and activity. He reported no pain with upper extremity movement and the incision was well-healed. The BioBridge was undetectable on cardiac cath and x-ray.

Comparison to Past Product/Procedures Used -

Compared to wire fixation, the BioBridge device results in a more stable fixation of rib division which results in a durable repair. Because it is biodegradable, there is no risk of foreign body placement on wound healing. Compared to more formal plating devices, the BioBridge device results in an equivalent repair with excellent long-term durability in cases requiring rib division for exposure.



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