



SNI Case of the Week

Avoiding inappropriate spine surgery in a patient with major cardiac comorbidities

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Received : 29 January 19

Accepted : 30 January 19

Published : 26 March 19

DOI

10.25259/SNI-57-2019

Quick Response Code:



ABSTRACT

Background: We as spine surgeons increasingly need to carefully screen our own patients for major medical/cardiac comorbidities to determine if they are candidates for spine surgery. Our medical/cardiac colleagues rarely understand how long anti-platelet aggregates and non-steroidal anti-inflammatories (NSAIDs) have to be stopped prior to spine operations, and when it is safe for them to be reinstated.

Case Study: A patient over 65 years of age, presented with 6 months of increased bilateral lower extremity sciatica, and 2-block neurogenic claudication. The MR scan showed moderate to severe lumbar stenosis L2-S1 with grade I L4-L5 spondylolisthesis, and multiple bilateral synovial cysts. Nevertheless, his neurological examination was normal. Further, he had > 5 stents placed within the last five years, and had undergone cardiac surgery two years ago requiring placement of a bovine aortic valve, and resection of a left ventricular wall aneurysm. He was also still on full dose Aspirin (325 mg/day), and Clopidogrel (75 mg po bid). Notably, 3 prior spinal surgeons (neurosurgery/orthopedics) had recommended multilevel lumbar laminectomy with instrumented fusions (e.g. including multilevel transforaminal lumbar interbody fusions (TLIF)).

Conclusions: Despite multilevel L2-S1 stenosis, Grade I L4-L5 spondylolisthesis, and multilevel bilateral synovial cysts, the patient's normal neurological examination and multiple cardiac comorbidities (i.e. requiring continued full-dose ASA/Clopidogrel) precluded, in my opinion, offering surgical intervention. Rather, I referred the patient to neurology for conservative management. What would you have done?

Keywords: Multiple Cardiac Stents; Valve Replacement; Cardiac Myomectomy; Hypertrophic Cardiomyopathy; Clopidogrel; Aspirin Therapy; Anticoagulation

INTRODUCTION

As spine surgeons, we have to increasingly determine whether a patient with multiple medical/cardiac comorbidities can “safely” undergo spine surgery. Although our medical/cardiac colleagues may “clear a patient” for such procedures, they rarely understand when and how long anti-platelet aggregates and non-steroidal anti-inflammatory (NSAID) therapies should be stopped perioperatively to avoid bleeding complications.

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Here, a male over 65 years of age, presented with bilateral lumbar radiculopathy, and 2-block neurogenic claudication. MR/CT and dynamic X-ray studies documented L2-S1 severe lumbar stenosis, grade I L4/5 degenerative spondylolisthesis, and multilevel bilateral synovial cysts. However, his neurological examination was normal, and he had > 5 cardiac stents placed within the last five years. Additionally, 2 years ago he had an aortic porcine valve replacement with left ventricular myectomy. Further, for continued cardiovascular prophylaxis, he remained on full dose Aspirin (325 mg/day), and Clopidogrel (75 mg po bid) therapy. Should this patient be a candidate for lumbar spine surgery with/without instrumentation?

Case Presentation

Clinical History and Lumbar MR Findings

A male over 65 years of age presented with a 6-month history of mild/moderate bilateral lower extremity sciatica and 2-block neurogenic claudication. The MR, CT, and dynamic X-ray studies documented moderate/severe L2-S1 lumbar stenosis with Grade I L4-L5 spondylolisthesis, and multilevel bilateral synovial cysts. Notably, his neurological examination was normal.

Medical Comorbidities

The patient had > 5 cardiac stents placed within the last 5 years. Additionally, 2 years ago, he underwent a bovine aortic valve replacement with left-ventricular myectomy for hypertrophic cardiomyopathy/aneurysmal dilatation. He was still on both Aspirin 325 mg/day, and Clopidogrel 75 mg po bid.

3 Other Spine Surgeons Recommended Instrumented L2-S1 Fusions

Three other spine surgeons (neurosurgeons/orthopedists) recommended multilevel L2-S1 decompressions with instrumented fusions (e.g. including multilevel transforaminal lumbar interbody fusions (TLIF)). None clearly discussed the potential risks of multilevel TLIF (e.g. risk of instrument-related failures attributed to osteopenia/osteoporosis given his long-term use of anti-platelet therapy), or the cardiovascular risks of acutely stopping ASA and Clopidogrel (e.g. major life-threatening thrombotic/embolic events).

My Surgical Recommendations

If the Patient Had No Significant Cardiac Comorbidities

If this patient had no significant cardiac comorbidities, and had failed a full trial of conservative management, he would have become a candidate for a decompressive laminectomy alone, or laminectomy with non-instrumented (in situ) posterolateral L4-L5 fusion.

With Cardiac Comorbidities as In This Case

The patient was neurologically intact. He had a history of >5 cardiac stents over the last 5 years. Additionally, 2 years ago, he had undergone cardiac surgery including placement of a porcine aortic valve plus myectomy for ventricular aneurysmal dilatation. He was still on both Aspirin and Clopidogrel. I would, therefore, not have recommended spinal surgery for this patient who I considered to be at increased risk for thrombotic/embolic cardiovascular events should anti-platelet therapy be abruptly discontinued. Additionally, I would not have offered an instrumented fusion, as he was likely severely osteopenic or frankly osteoporotic given his chronic long-term use of ASA. What would you, as a spine surgeon, have done?

Brief Summary of When to Stop Anti-Platelet and Non-Steroidal Anti-Inflammatory Medications (NSAIDs) Prior to Spine Surgery

Anti-platelet aggregates (e.g. Aspirin (ASA), Clopidogrel (Plavix)) should typically be stopped at > 7-10 days prior to spine surgery.^[1-5] Kang *et al.* (2011) documented that low-dose ASA resulted in greater perioperative blood loss for patients (mean age 68.5) undergoing 2-level spinal surgery, and agreed to stopping low dose ASA 7 days preoperatively.^[2] Park *et al.* (2013) documented stopping ASA 3-7 days prior to spine surgery resulted in an increased bleeding risk, but there was no increased bleeding risk for those patients on no preoperative.^[4] Of interest, Gerstein *et al.* (2012) noted that the cessation of ASA resulted in several weeks of an "acute ASA withdrawal syndrome" characterized by platelet rebound and a prothrombotic, hypercoagulable state increasing the risk of cardiovascular complications.^[1]

Specific Times to Stop Different NSAIDs Prior to Spine Surgery

In 2014, Park *et al.* compared estimated blood loss for ASA with/without NSAIDs in lumbar fusion patients. They found the failure to stop ASA and NSAIDs for adequate periods of time preoperatively significantly increased perioperative bleeding risks in all groups (i.e. even if ASA was stopped 1 week preoperatively with varying intervals for the different NSAIDs).^[5] Indeed, there are different guidelines for stopping the various NSAIDs prior to surgery.^[3,5] Their recommendations included stopping the following NSAID medications 1-day preoperatively; Diclofenac (Voltaran), Ibuprofen (Advil, Motrin), Ketorolac (Toradol). Two-days preoperatively the following NSAIDs should be stopped: Etoricoxib (Lodine), and Indomethacin (Indocin). The following NSAIDs should be stopped 4-days preoperatively; Meloxicam (Mobic) and Naproxen (Aleve, Naprosyn, Anaprox). NSAIDs that should be discontinued at 6-days preoperatively included Nabumetone (Relafen), while one should stop Oxaprozin (DAYPRO) and Piroxicam (Feldene) 10-days preoperatively.^[3,5]

CONCLUSION

Despite the L2-S1 moderate/severe spinal stenosis, Grade I L4-L5 spondylolisthesis, and bilateral multiple synovial cysts, the patient's normal neurological examination and his major cardiovascular comorbidities made him a poor candidate, in my opinion, for lumbar surgery. Three other spine surgeons offered him multilevel instrumented fusions and failed, in my opinion, to recognize the significant comorbid risk factors that, more likely than not, would have contributed to significant perioperative morbidity/mortality.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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How to cite this article: Epstein NE. Avoiding inappropriate spine surgery in a patient with major cardiac comorbidities. *Surg Neurol Int* 2019;10:44.