Author's response to reviews

Title: Primary pyogenic spondylitis following kyphoplasty: a case report

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Author's response to reviews: see over
Dear Editor,

thank you for sending us the reviewers comments and supportive criticism which we carefully considered in the revision of our manuscript entitled “Primary pyogenic spondylitis following kyphoplasty: a case report”.

We hope that this revision can now be accepted for publication. Attached you find some comments and answers (marked yellow) addressing directly the reviewers suggestions.

Referee Viola Bullmann

Comments to the Author:

This is an interesting Case report. The authors present a case of pyogenic spondylitis of the first lumbar vertebra 6 weeks after kyphoplasty intervention in an osteoporotic fracture.

Revision:
1. Introduction: Page 3, Line 1-2:
The two prospective randomized vertebroplasty studies, published in New England journal should be mentioned here.
We added the two New England Journal papers.

2. Case Presentation: Page 4, Line 3-8:
What is the argument for conservative treatment? In my opinion there is a clear indication for primary operative treatment, as the authors mentioned on page 3....”hyposthesia.....x-ray demonstrated destruction and subtotal resorbtion of the first lumbar vertebra....cement filling was displaced....compression of the lumbar spinal cord.”.
These are four reasons for primary operative treatment. Please explain your decision for conservative treatment more detailed and critical.
The indication for surgery was clearly seen by us and well discussed with the patient. At that timepoint the patient declined surgery and insisted on conservative treatment due to his bad general medical condition. We made this clearer in the case presentation.

3. Case Presentation: Page 4, Line 9-17:
The authors did an two staged posterior-anterior operative procedure. In general I agree with this procedure, but there are two critical points.

a.) why did the authors performed the anterior debridement and corporectomy 10 days after initial primary posterior instrumentation. In my opinion this is too late, because the bony and
PMMA components still were compressing the spinal canal from anteriorly since the anterior decompression was done.
After posterior instrumentation and laminectomy the patient was well decompressed. Due to the bad medical condition it was not possible to perform anterior surgery earlier.

b.) The pressure to the spinal canal, following neurological defects, was induced from anteriorly. There was no epidural abscess, therefore please explain why do you did laminectomy. In my mind the authors did not have decompression effect from posteriorly, they only induced more instability.
We discussed selective anterior surgery but finally decided for p-a. As you can see in figure 3c, the stenosis is in a lordotic area. Compression is induced from anterior. However, to reach a fast and direct decompressive effect and stabilisation we decided to do the posterior approach first. In the lordotic area we aimed to decompress the spinal canal and to allow the spinal cord to move posterior. In case of a kyphotic thoracolumbar region this would be more critical. In the case discussed here we think that the procedure was suitable to achieve decompression and stabilisation in the medically ill patient.

4. Discussion: Page 4, Line 26-29:
The authors pointed out, that this is the first case report of pyogenic spondylitis after kyphoplasty, but there are 10 reports on infection after vertebroplasty. Please explain, what is the difference in whether you use the standard vertebroplasty-technique or the additional balloon-kyphoplasty technique. In my mind “the infection way from the skin to the vertebral body is completely the same.”
We discussed this point in more detail.

5. Discussion: Page 4, Line 31:
The reference 5 is a product information of the industry. This should not be citated in a science paper.
We removed this citation from the reference list.

6.) Discussion: Page 5, Line 27-31
If single shot antibiotic did not prevent infection in this case, what are the suggestions of official guidelines or in the literature. Please add!
There are no official guidelines for antibiotic prophylaxis; we added this information in the text.

7.) Discussion:Page 5, Line 32-34
It is a hypothesis, that PMMA with antibiotics resolve the problem. There are no data for the spine. Please discuss this point more critically.
We discussed this point in the text.

8.) Discussion: Page 6, Line 6-9:
another reason for severe back pain after kyphoplasty without adjacent segment fractures could be necrosis in the vertebra caused by the cement injection.
Please discuss!
We discussed this point.
9.) Figures (Figure 3)
Please add the sagittal MRI in order to show the kyphotic deformity and the spinal cord compression.

We added Fig. 3c which shows spinal cord compression. There was no kyphotic deformity (see comments above).

10.) Figure (Figure 4)
Please select for 24 month control a better sagittal plane x-ray. This one assume, that the obelisc cage is dislocated in the vertebral body of L2 and that the pedicle screws at T11 begin to dislocate.

There is no alternative sagittal x-ray, but with better image resolution you will see that there is a stable spondylodesis.

Referee Cornelia Putz

Comments to the Author:

(1) General comments
This case report by Schofer et al. addresses an important complication following kyphoplasty: primary pyogenic spondylitis with an accompanying incomplete paraplegia. The authors conclude that if recurrent back pain after kyphoplasty occurs, spondylitis must be considered as a possible, but rare differential diagnosis.

(2) Revisions necessary for publication
• Case presentation, 1st paragraph:
The authors should clarify the administration of antibiotics during kyphoplasty and make the necessary changes within the manuscript.
They reported on administration of 2 g cefazolin during kyphoplasty, which constitutes a 1st generation cephalosporin.
The kyphoplasty was done in a different clinic and they gave the patient preoperative a singular antibiotic prophylaxis with 2 g cefazolin.

Controversially, they mentioned in the 2nd paragraph of their discussion that “the pyogenic spondylitis was not prevented by a single perioperative prophylactic antibiotic administration using a first-generation cephalosporin.”
I would recommend to focus on the patients’ comorbidities and the possible benefit of antibiotic cement in this single case.
Thank you, we focused in the way you recommended.

• Case presentation, 3rd and 4th paragraph:
I would recommend adding more precise information about the dynamic of incomplete paraplegia.
The reader gets the impression that initially sensory incomplete paraplegia below L1 changed into motor incomplete paraplegia after conservative treatment (percutaneous drainage of the psoas abscess and antibiotic treatment). The authors should explain and discuss, why they did not perform primary laminectomy, decompression of the myelon and dorsal stabilization in a patient with spinal cord compression (MRI). As incomplete paraplegia goes along with neurogenic bladder and bowel dysfunction, the authors should also add this information and the outcome after 24 months.

We did these modifications.

Otherwise this case report is nice and informative and reminds spine surgeons that prophylactic antibiotic administration is a prerequisite in kyphoplasty. Antibiotic cement have to be discussed in single cases based on patients’ disease in order to prevent pyogenic spondylitis.

We added this aspect to the conclusion.

Minor issues not for publication

• Abstract. Case presentation: please specify partial paralysis below L1 (I would propose to use sensory incomplete paraplegia below L1) instead of partial paralysis…

We did so.

• Manuscript. Case presentation. 1st paragraph. “Medical examination and imaging with CT MRI” should be corrected into……. imaging (CT and MRI)

We did so.

• Manuscript. Case presentation. 2nd paragraph. “…..hypoaesthesia below L1…”

We changed in sensory incomplete paraplegia below L1.

• Please add information on sensory examination (hyposensibility and hypoaesthesia…)

• Manuscript. Case presentation. 3rd paragraph….the patient was taken to the operating theatre….should be changed into proper english.

We did so.

• Discussion. 1st paragraph. “….symptomatic compression fractures, and it usually.. Please avoid usually.

“…Up to the end of the third quarter 2008, with increasing tendencies…”the sentence is not clear.

We did these modifications.

The complication rate is comparatively low after kyphoplasty. Please avoid additional words like comparatively if no comparison is given.

We did so.

“The same holds true….” The sentence is not clear.

We changed this sentence.
Quality of written English: Needs some language corrections before being published

The manuscript was revised by a native speaker.

Thank you for your positive assessment of our paper.

Thanks for your comments, editing and proof reading of the manuscript. We have carried out all of your reviewers’ suggestions and look forward to seeing our paper published in the near future.

Best regards, Markus D Schofer