

Indications, contraindications, and complications of vertebroplasty and kyphoplasty

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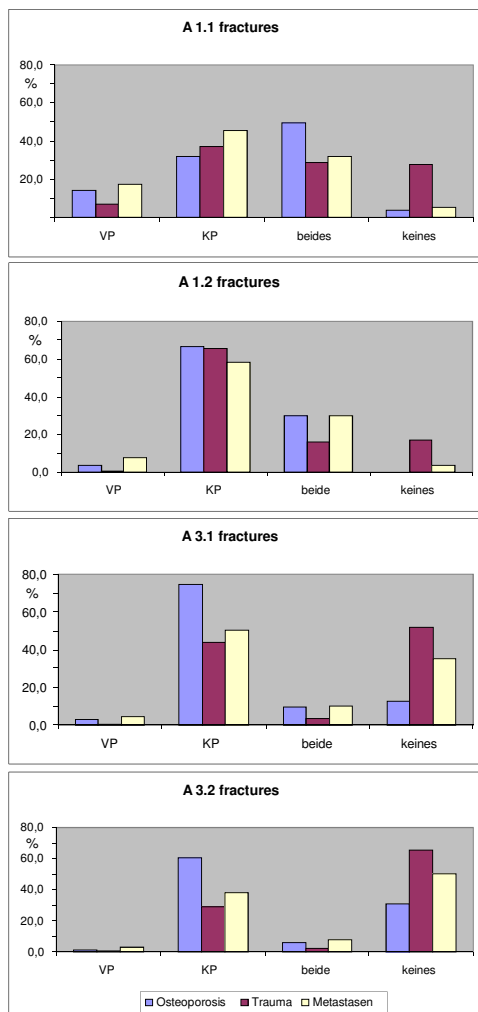


Fig. 1
Answers on radiological indications for Vertebroplasty and Kyphoplasty on AO- Classification (A 1.1, A 1.2, A 3.1, A 3.2) for osteoporosis, trauma und netastasis (n=151).

Introduction:

Over recent years, minimally invasive percutaneous interventions like vertebroplasty and kyphoplasty have proven to be effective treatments in vertebral body fractures. The aim of our study was to give exact indications and contraindications and to analyse the complication rates for both procedures.

Materials/Methods:

We developed a multiple choice questionnaire with general and specific questions for vertebroplasty and kyphoplasty and sent it to all users of kyphoplasty in Germany registered until 2008. The questions covered diagnostics, clinical and radiological indications with AO classification, absolute and relative contraindications, and exact questions on complications dating from 2007. The questionnaires were evaluated anonymously. In addition to a catalogue of preset answers a free information field was provided for a description of rare complications.

Results

Altogether 580 questionnaires were sent to different clinics. 327 (56.4%) correctly filled in questionnaires were returned to us, 21 (3.6%) could not be evaluated because of a wrong address. 151 (46.2%) of the users were performing both vertebroplasty and kyphoplasty, 176 (53.6%) only kyphoplasty. For 70% of the users, the main clinical indication was permanent back pain at the fractured level with an average VAS of 5.5. Over 80% of the users regarded A1.1, A1.2, and A3.1 fractures as main indications for kyphoplasty. For > 60%, osteoporotic A1.1 fracture constituted the main indication for vertebroplasty (**Fig.1**). Absolute contraindications included acute infection (94%), allergy to bone cement (86.3%), and untreatable coagulation disorder (80.3%). Altogether 39 (27.7%) users of vertebroplasty (n=3358) and 68 (21.1%) users of kyphoplasty (n=13372) reported no complications for 2007. The complication rate analysed for kyphoplasty was 16.3% (n=2181), for vertebroplasty it was 32.4% (n=1088). Complications mentioned most frequently were cement leakage without any clinical evidence (VP n=740, 22 %; KP n=1412, 10.6%) and vertebral fractures of the adjacent level (VP n=163, 4.9%, KP n=611, 4.6%). According to user statements, relative risk of myelon compression is reduced by 49% with kyphoplasty when compared to vertebroplasty (**Tab.1**).

Conclusion:

With our collected data, it became possible to determine exact clinical and radiological indications for both vertebroplasty and kyphoplasty. Furthermore, relative and absolute contraindications could be shown. Overall, kyphoplasty had a complication rate about 50% lower than vertebroplasty. The lower complication rate given by kyphoplasty users could offer a possible explanation for the more frequent use of this technique. Our efforts will now be focused on building up an international register which will provide us with long-term prospective data on both procedures, so that a more detailed analysis of their different complication rates can be developed.

| complications | VP | in % | KP | in % |
|--------------------------------------|------|------|------|------|
| no complications 2007 | 39 | 27,7 | 68 | 21,1 |
| number of complications 2007 | 1088 | 32,4 | 2181 | 16,3 |
| cement leakage without symptoms 2007 | 740 | 22 | 1412 | 10,6 |
| cement leakage with symptomes 2007 | 261 | 7,8 | 374 | 2,8 |
| adjacent level fractures 2007 | 163 | 4,9 | 611 | 4,6 |

Tab. 1

Complications for the year 2007 Vertebroplasty (n=3358) and Kyphoplasty (n=13372)