

Section: Intraoperative Bildgebung

ID: 65

Abstract-Title:

INTRAOPERATIVE COMPUTED TOMOGRAPHY IN SPINE
SURGERYINTRAOPERATIVE COMPUTERTOMOGRAPHIE IN DER
SPINALCHIRURGIE

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Abstract-Text:

Purpose:

Spine surgery, including decompression and stabilization, can be challenging due to small geometry of important bony structures such as facets and pedicles, anatomical variations (i.e. the course of the vertebral artery within the axis), and close anatomical relationship of the bone to the spinal cord, roots, and vessels. Therefore, precise placement of instrumentation as well as judgment of degree of decompression may be difficult. The use of navigation tools in this type of surgery does facilitate the procedure and minimize risks. If, however, navigation fails severe complications may occur. Intraoperative computed tomography may be helpful here, giving a possibility to correct the position of the implants or widening decompression before wound is closed. The aim of this study was to evaluate the use of intraoperative computed tomography in spine surgery. Specific research questions were as follows: 1. Are the implants placed correctly?
2. Has decompression been performed sufficiently?

Method:

This is a prospective study on 45 patients, having undergone spine surgery for a variety of indications and therefore using different types of spine fixation devices. Surgery was performed by two experienced spine surgeons. 191 screws and 39 cages or bone grafts were placed within the spine. The position of both the implants as well as the degree of decompression was checked using the intraoperative computed tomography.

Results:

Decompression was necessary in 39 out of 45 patients. In each of these patients, decompression was sufficient and any widening of the decompression was not necessary in any of these. However 10 screws out of 191 (2%) screws were misplaced and had to be changed. Repeated computed tomography showed that the screws were now all placed correctly.

Conclusion:

The use of intraoperative computed tomography is a useful tool to check surgical procedures within the spine. It has to be defined as a postoperative control, not as an online control as it is a navigation tool. However, shift of vertebral bodies, as it is a disadvantage of navigation, can be avoided here. Thus, thus it will not replace intraoperative navigation but really complete it. Moreover, costs of revision surgery will be

avoided or at least be reduced. In this study intraoperative computed tomography following spine surgery was useful to check the dimensions of spine decompression as well as position of the implants. The intraoperative picture giving by means of a high resolution CT enables the surgeon to have a quality an learning control. Its usefulness is also obvious in the presence of a 2% rate of implant revision and is an effective procedure to avoid secondary operations.

Bild 1/JPG

