

## **PREOPERATIVE CT-BASED PLANNING FOR PEDICLE SCREW PLACEMENT IN CONGENITAL SCOLIOSIS SURGERY**

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*DURING THE LAST FEW YEARS, PEDICLE SCREW PLACEMENT FOR INSTRUMENTED FUSION OF IDIOPATHIC SCOLIOSIS BECAME A ROUTINE PROCEDURE AMONG SPINAL SURGEONS; AFTER THE LEARNING CURVE, MOST OF THE SURGEONS ARE CONFIDENT TO PLACE THE SCREWS USING A “FREE-HAND” TECHNIQUE, THE C-ARM BEING USED ONLY TO CONFIRM THE ACCURACY OF SCREW PLACEMENT.*

*CONGENITAL SCOLIOSIS SURGERY HAS SEVERAL PARTICULARITIES; ONE OF THESE IS THE DIFFICULTY OF ASSESSMENT OF THE PEDICLE SCREW TRAJECTORY FOR A MALFORMED VERTEBRA. THE NAVIGATION EQUIPMENT, TOGETHER WITH THE C-ARM / O-ARM CONTROL, MAKE THE SURGEON’S TASK LESS DIFFICULT.*

*TAKING INTO ACCOUNT THAT IN OUR INSTITUTIONS WE DO NOT HAVE SPINE-DEDICATED NAVIGATION EQUIPMENT, WE HAVE TRIED TO DEVELOP A SCREW PLACEMENT TECHNIQUE BASED ON THE PRE-OPERATIVE EVALUATION OF THE FULL SPINE CT-SCAN (MPR AND 3D VOLUME RENDERING IMAGES). NEW GENERATION CT-SCAN DEVICES (64 SLICES) ALLOW A HIGH-RESOLUTION SCAN OF THE ENTIRE SPINE IN A VERY SHORT TIME, WITH A RADIATION DOSE 50-70% LOWER THAN STANDARD CT.*

*WE DISCUSS OUR TECHNIQUE AND ESPECIALLY THE PROBLEMS ENCOUNTERED (RADIATION DOSE, PATIENT SUPINE DURING CT / PRONE DURING SURGERY) AND ALSO THE LIMITATIONS OF MRI AS A HELPFUL TOOL FOR THIS VERY PARTICULAR SURGERY.*

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**KEYWORDS:** SCOLIOSIS; CONGENITAL; PEDICLE SCREW; PREOPERATIVE CT

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