

Comparative characteristics of anterior and posterior stabilization in operative invasions in the cervical spine

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Background: Currently large experience of successfull application of various stabilizing operative invasions for cervical spine pathology has been accumulated. At the same time there are few works devoted of the comparative analysis of these techniques.

Objective: Definition of possibilities, limitations and safety of different approaches to cervical spine fusion.

Design: Retrospective multicenter observation analysis.

Methods: Data of 433 patients operated using stabilizing systems as follows: 1st group (228 cases) with application of anterior fixation; 2nd group (175 cases) with posterior cervical screw fixation and 3rd group (30 cases) with application of combined (anterior and posterior) fixation.

Results *Anterior fixation.* ACDF, ACCF and their combinations were applied as stabilizing technologies. In 18% of the patients 49 complications of I-IVA level by Dino&Clavien were revealed (fig.1). *Posterior fixation.* In group 2 the stabilization was produced using screw constructs. In 13,7% of the cases 25 complications of I-V level were found (fig. 2). *Combined fixation.* It presumed the application of both anterior and posterior stabilization. There were 14 complications of I-IIIB level after anterior stabilization and 3 complications of IIIA-IIIB level after posterior one (fig.3).

Discussion Posterior fixation has wider range of possibilities, i.e. any age, length, location and pathology (table.1). At the same time these advantages are delivered by obligatory application of the screw fixation only. Nevertheless, dorsal fixation has certain limitations for application, i.e. impossible ventral decompression, limitations for correction of segmental lordosis, accessibility and greater invasiveness for the soft tissues.

Figure 1. Complications by Dino&Clavien after anterior fixation. **Figure 2.** Complications by Dino&Clavien after posterior fixation.

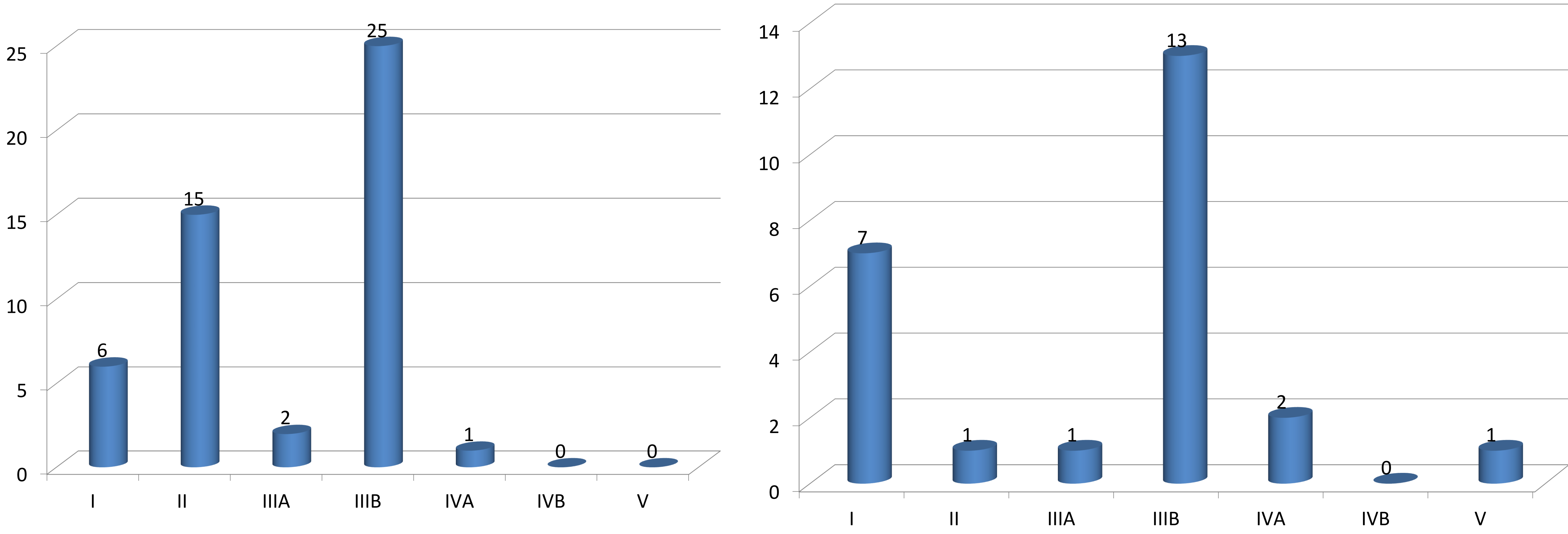


Table 1. Comparative characteristics of anterior and posterior fixation

Comparison parameter	Type of fixation	
	anterior	posterior
Minimum age of patient	5 лет	9 месяцев
Maximum segments fixation per patient	3-4	not limited
Localization fixation	from C2–C3 before T2	from C0 and below
Pathology	Trauma, degenerative diseases (frequently)	whatever
The average duration of surgery (min)	103,2 ± 52,2	176,9 ± 79,9
Average blood loss (ml)	124 ± 147,3	203,9 ± 170,2
Average hospital stay (day)	14,3 ± 6,4	21,3 ± 12,3
Complications (%)	22	15,2
The ratio of the need for reoperations in case of complications (%)	81,1	55,6

Figure 3. Complications by Dino&Clavien after anterior and posterior fixation.

