

SUPRACLAVICULAR APPROACH TO THE SUBCLAVIAN VEIN – ONE WELL FORGOTTEN TECHNIQUE WITH IMPRESSIVE RESULTS

Biser BORISOV¹, Vasil TODOROV¹, Sergey ILIEV², Kiril NEDYALKOV²

¹ CLINIC OF NEPHROLOGY AND DIALYSIS, UNIVERSITY HOSPITAL FOR ACTIVE TREATMENT „DR. G. STRANSKI“, MEDICAL UNIVERSITY – PLEVAN, BULGARIA

² DEPARTMENT OF SURGERY, UNIVERSITY HOSPITAL FOR ACTIVE TREATMENT „DR. G. STRANSKI“, MEDICAL UNIVERSITY – PLEVAN, BULGARIA

Correspondence to: Biser Borisov; E-mail: Biserugo@abv.bg

Introduction: Insertion of temporary and tunneled catheters for hemodialysis in the internal jugular vein is a gold standard. On the other hand, the supraclavicular approach to the subclavian vein is described by Yoffa in 1965. Despite its old invention, the latter technique is well forgotten for unknown reasons.

The aim of this study is to present our experience with the usage of the supraclavicular approach for insertion of temporary and tunneled catheters.

Material and Methods: We provide our experience on insertion of 506 temporary and 501 tunneled catheters within a five-year period (from 1-st January 2010 to 31-st December 2014). We use **8 (eight)** different places for catheters insertion, including the subclavian vein by the supraclavicular approach following the techniques of D. Yoffa and J. Gorchynski.

The collected data includes age, sex, reasons for hemodialysis, number of attempts for successful cannulation, number of acute (AC) and chronic (CC) complications, and dependence on the catheter insertion location.

Results:

The gender distribution shows: 463 (46%) women and 544 (54%) men and the median age is 60.0 (+/-13.2) years. In the cases of temporary catheters: 104 (20.5%) are inserted in the subclavian vein by the supraclavicular approach (SCVSC), 70 (13.8%) – in the internal jugular vein (IJV) and FV data; in the cases of tunneled ones – SCVSC – 281 (56%), and IJV – 207 (41%) catheters, respectively (figures 1, 2).

We found significant statistical correlation ($p < 0.05$ and $r = 0.23$) between the acute complications and the insertion position – they are more in cases of insertion in IJV, than in SCVSC (figure 3).

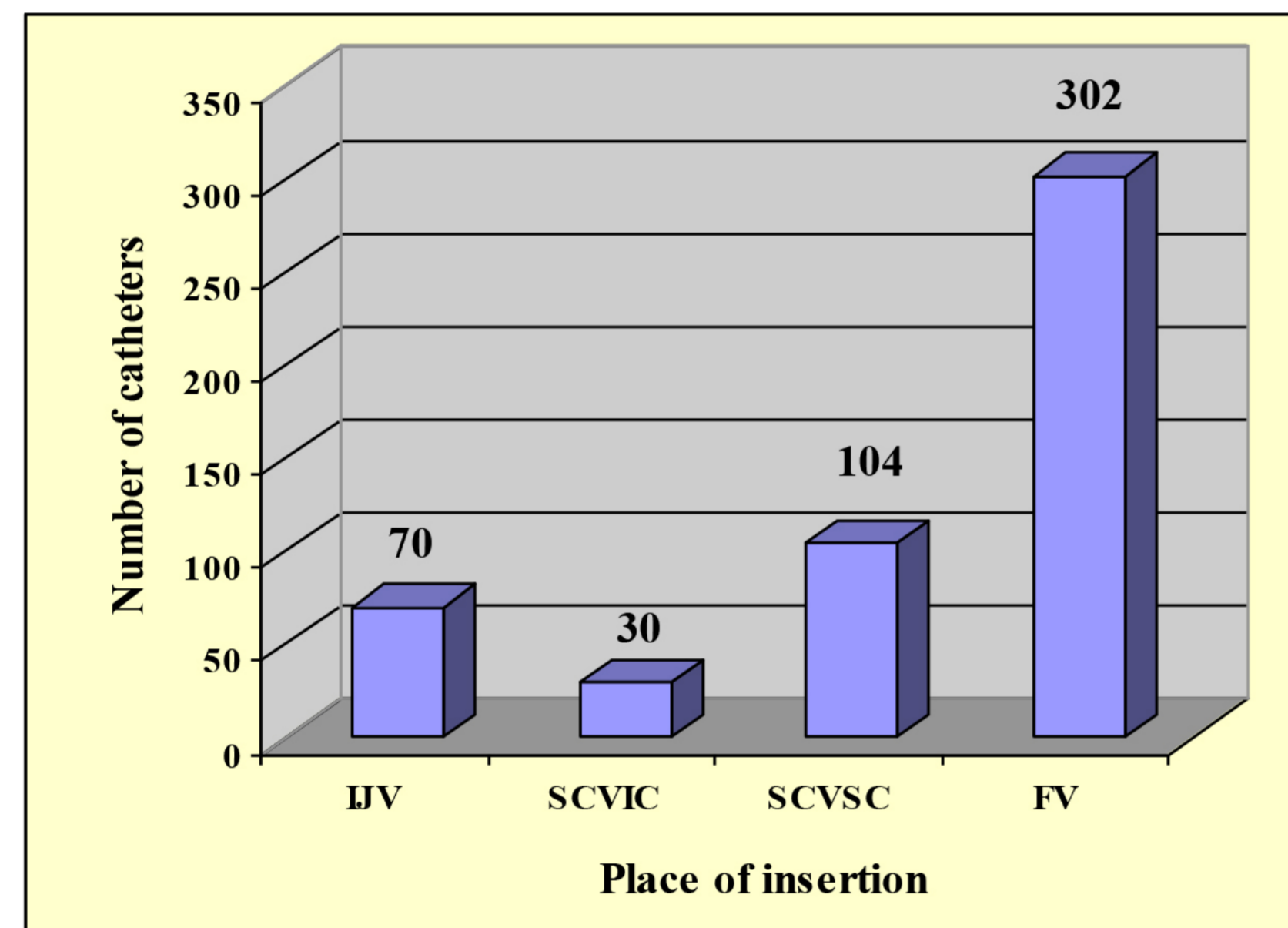


Figure 1 – Distribution of temporary catheters depending of their insertion place (n=506). (FV – femoral vein; SCVIC – subclavian vein infraclavicular approach; IJV – internal jugular vein; SCVSC – subclavian vein supraclavicular approach.)

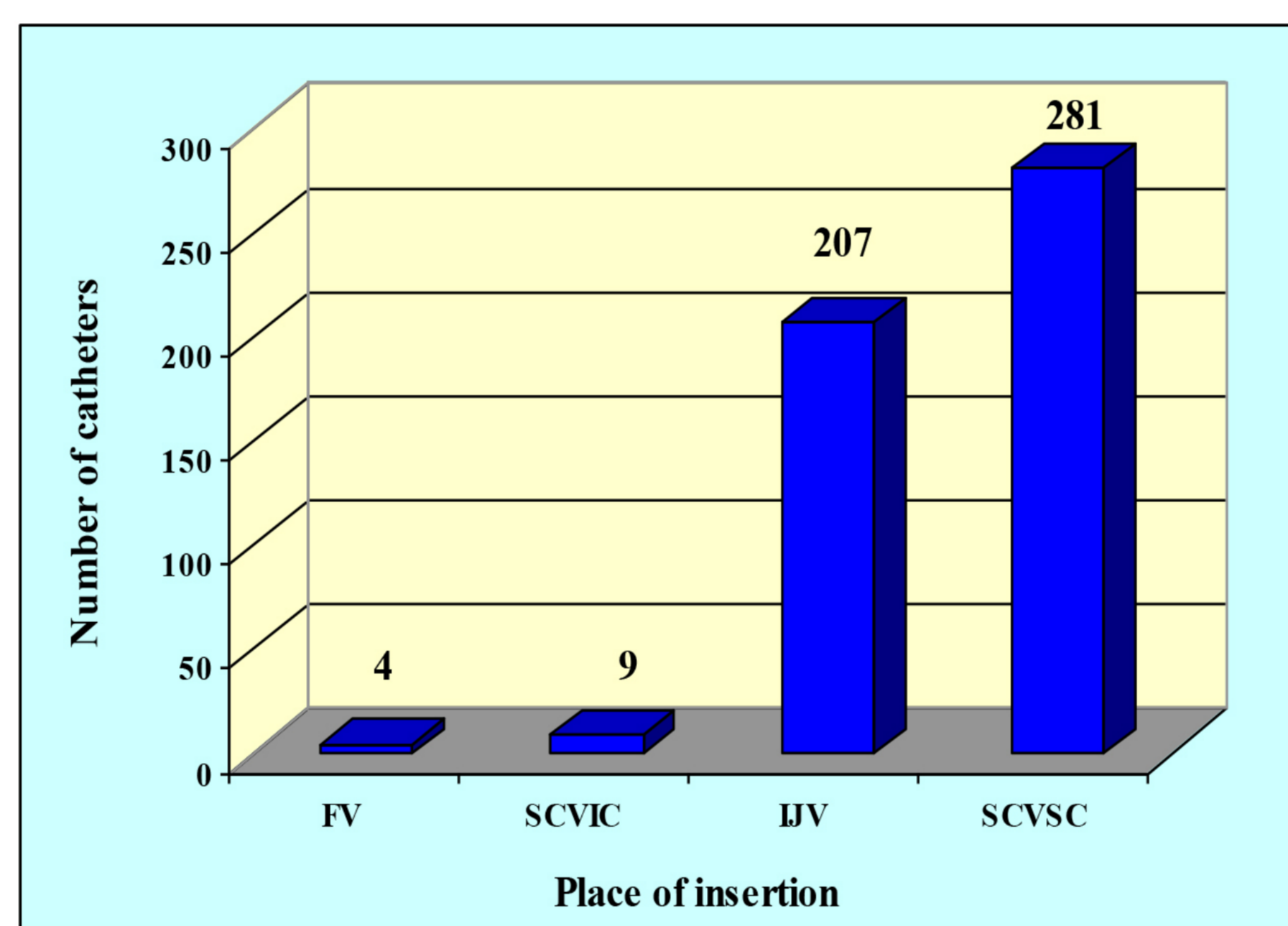


Figure 2 - Distribution of tunneled catheters depending of their insertion place (n=501). (FV – femoral vein; SCVIC – subclavian vein infraclavicular approach; IJV – internal jugular vein; SCVSC – subclavian vein supraclavicular approach.)

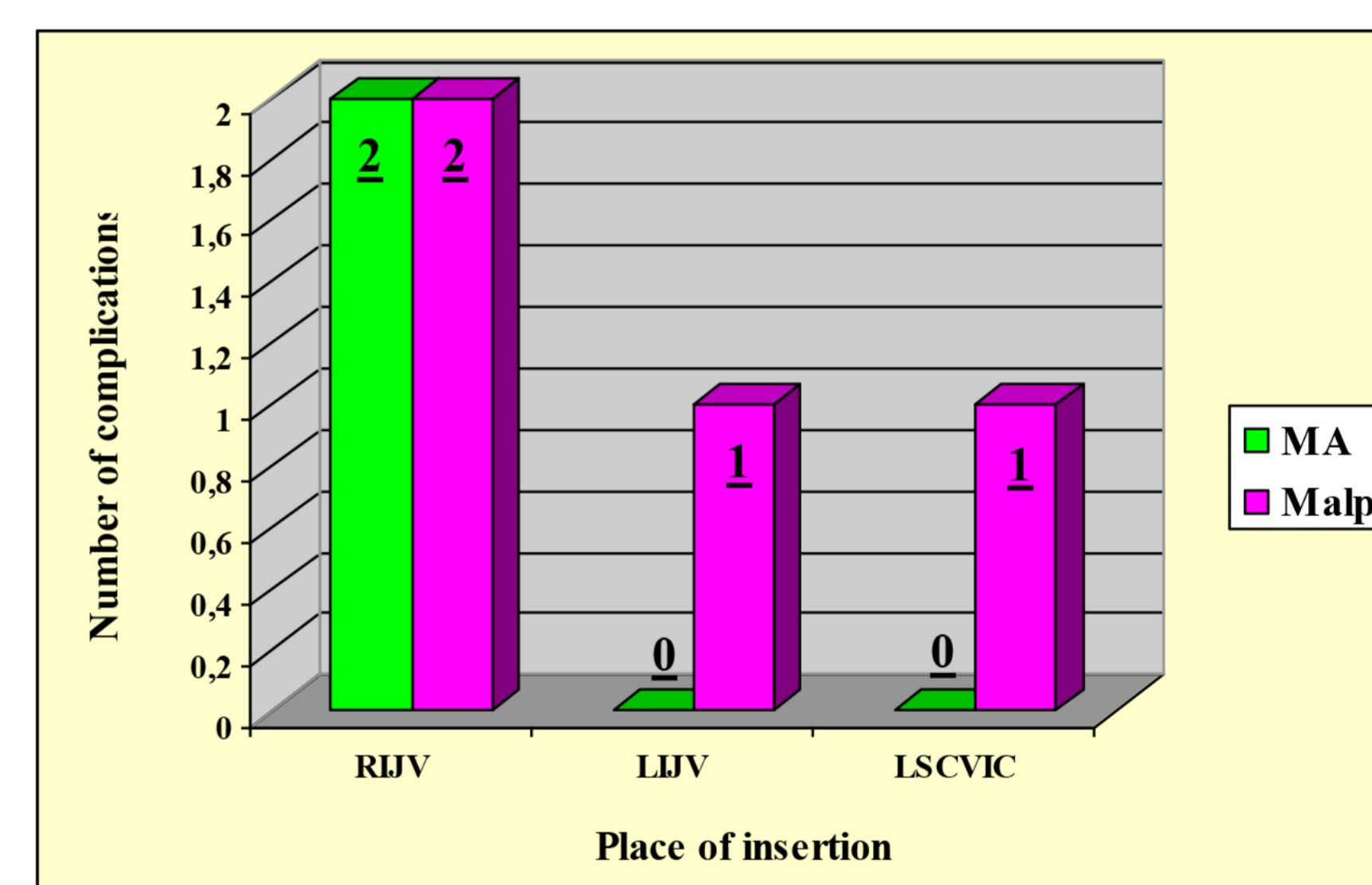


Figure 3 – Distribution of acute complications of tunneled catheters depending of insertion place (n = 6). (LSCVIC – left subclavian vein infraclavicular approach; R/LIJV – right/left internal jugular vein.) (MA – malignant arrhythmia, Malp. – malposition.)

We did not find significant correlation between the insertion place and the chronic complications; even central vein stenosis is more frequent in the IJV than in the SCVSC, but this is not significant ($p > 0.05$). Primary catheter patency of temporary and tunneled catheters is higher when they are inserted in the left vein (figures 4, 5).

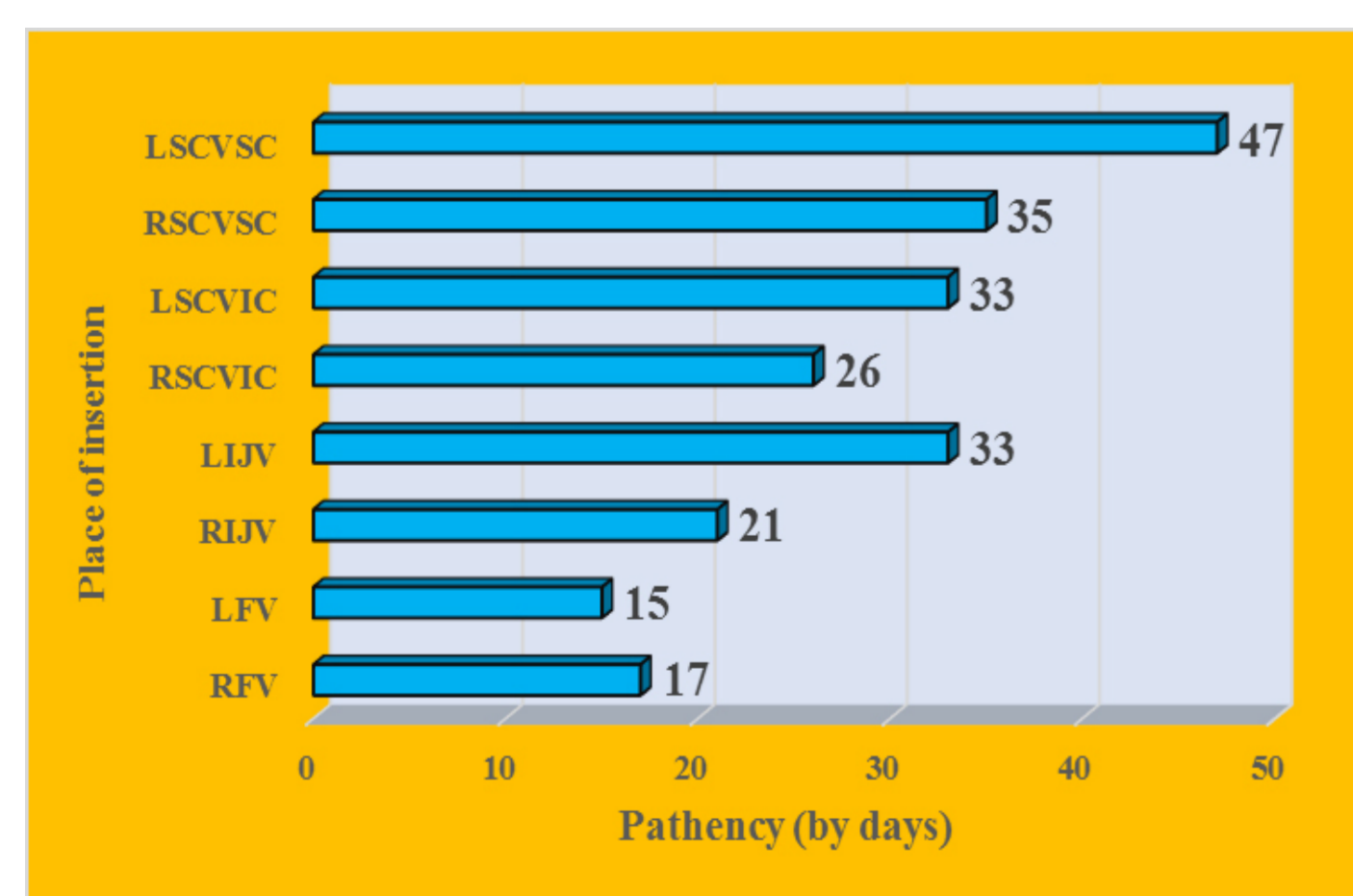
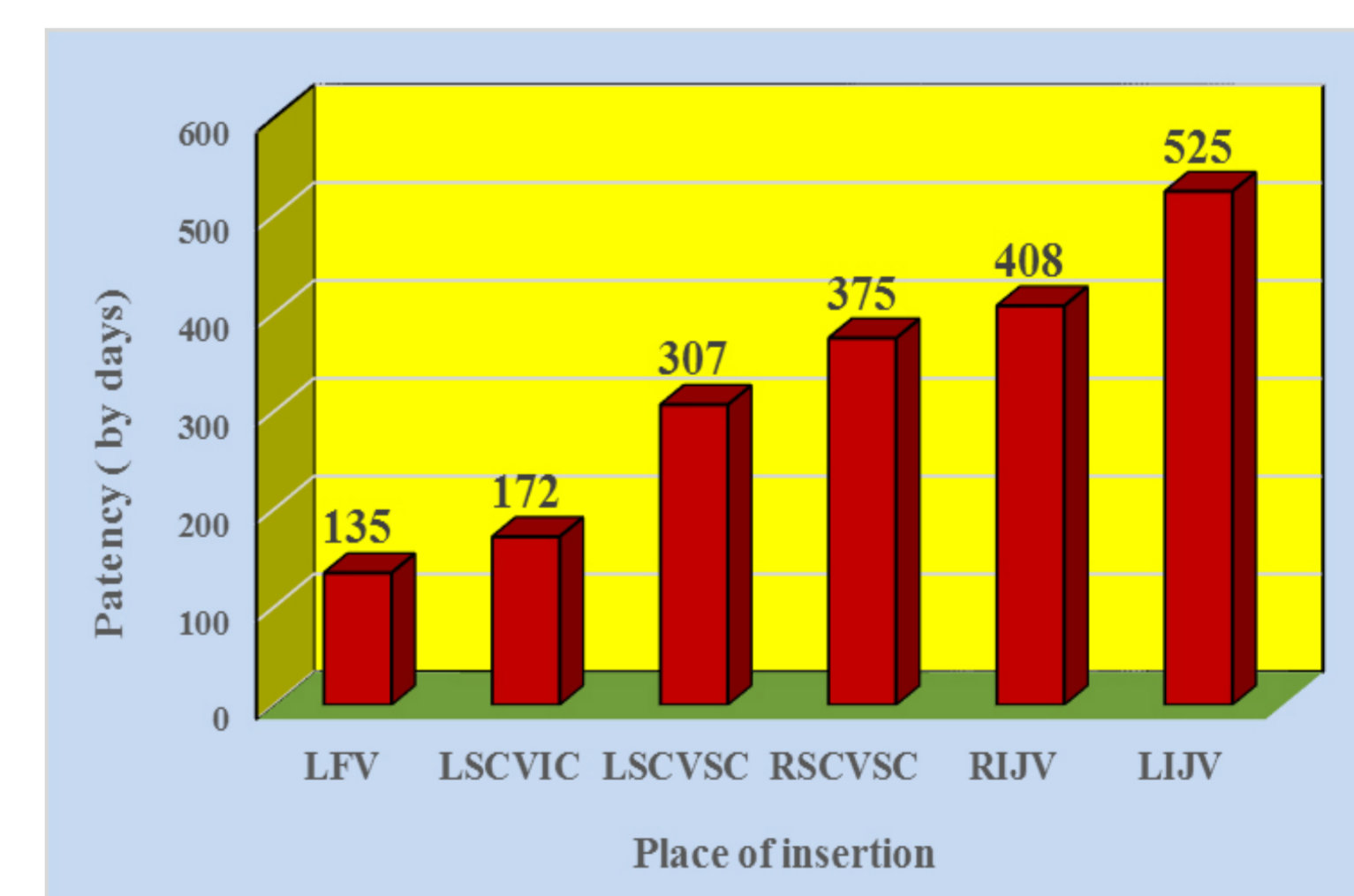


Figure 4 – Distribution of primary temporary catheters patency by insertion place.

The differences are significant about pairs LSCVSC/RSCVSC, LSCVSC/LSCVIC, LSCVSC/LIJV and RSCVSC/RIJV ($p = 0.0001$). (R/LFV – right/left femoral vein; R/LSCVIC – right/left subclavian vein infraclavicular approach; R/LIJV – right/left internal jugular vein; R/LSCVSC – right/left subclavian vein supraclavicular approach.)

Figure 5 – Distribution of primary tunneled catheters patency by insertion place. The differences are significant about pairs LIJV/RIJV and LIJV/RSCVSC ($p = 0.0001$), but they are not significant ($p > 0.05$) about pair RIJV/RSCVSC.

(FV – femoral vein; SCVIC – subclavian vein infraclavicular approach; IJV – internal jugular vein; SCVSC – subclavian vein supraclavicular approach.)



Conclusion: We conclude that the supraclavicular approach to the subclavian vein is easier, safer and practically more convenient method than the cannulation of the IJV. The revisit of this approach demonstrates that it should be more widely used.

Key words: vascular access, supraclavicular approach, subclavian vein, internal jugular vein, complications.