Covered Stents for Endovascular Treatment of Aortoiliac Occlusive Disease: A Systematic Review and Meta-Analysis

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Purpose: The treatment of aortoiliac occlusive disease (AIOD) has largely shifted to endovascular techniques, with primary stenting constituting the preferred treatment approach. The goal of the current study was to summarize available literature and to determine whether covered stents are superior to bare metal stents for the treatment of AIOD, in terms of both periprocedural and long-term outcomes.

Methods: A meta-analysis of 47 studies was conducted with the use of random effects modeling. The incidence of adverse events during follow up among the individual included studies was synthesized.

Results: Most of the lesions were located at the common iliac arteries and were chronic total occlusions. The procedure was technically successful in almost all cases in both groups, with a low rate of periprocedural complications observed in both groups. The reported primary patency rates for the non-covered and covered stent group during an average follow up of 24.3 months among the individual studies, were 84% and 92% respectively, while surgical or endovascular re-intervention was required in 10% of non-covered stent cases and in 6% of covered stent cases. Eight studies comparing covered vs non-covered stents in terms of patency demonstrated superiority of covered stents (OR: 2.47; 95% CI: 1.01-6.01; p ¼ 0.047 Combining TASC C/D lesions together 12 studies reported 92% (95%CI:89%-95%) primary patency in the covered stent group, while 7 studies reported 75% (95%CI: 60%-88%) primary patency for cases treated with non-covered stents.

Conclusion: This study demonstrated that covered stents are safe and effective when utilized for the treatment of AIOD. Covered stents were associated with a statistically significant higher odds of primary patency in both the overall cohort and in more complex TASC C/D lesions. However, additional high-quality comparative analyses between covered vs bare metal stents and between several types of covered stents are needed to determine the most optimal treatment modality for AIOD.