

A New Balloon System for Complete Dilation of Self-Expanding Mesh Stents in Malignant Esophageal Stenosis

In the palliative treatment of malignant esophageal stenoses, the implantation of self-expanding wire mesh prostheses has become a recognized therapeutic procedure, and various types of prostheses using different materials are available. The self-expanding nitinol Ultraflex prosthesis, with a diameter of 18 mm and a length of 70–140 mm (Microvasive, Boston Scientific) is a well-known example (1,2). However, our own experience with more than 20 patients who exclusively received this type of prosthesis has shown that, in contrast to other types of prostheses, the Ultraflex tends to lead to the formation of folds, due to its slightly lower initial expansion force (particularly if more strength is required and more extensive tumor stenoses are present). These folds occur particularly at the tulip-shaped proximal end of the prosthesis, appearing radiographically as apparent contortions of the mesh. If the prosthesis does not fully unfold, it cannot completely fulfil its function, and dysphagia may persist; in addition, dislocations due to inadequate fixation, particularly at the proximal end, are possible. An additional balloon expansion of the implanted stent is therefore recommended in these cases. Due to their potential for eccentric expansion and shortening during air insufflation, however, the balloon catheter systems currently available have been associated with a risk of stent dislocation. A new balloon catheter system with a concentrically expanding balloon consisting of nylon-reinforced polyurethane has therefore proved valuable in our experience. The newly developed Olbert Catheter System for esophageal dilation (Meadox-Surgimed, Denmark) is a coaxial catheter (total length: 120 cm, shaft: 10 Fr Teflon tube) with an expandable balloon at the distal end (Figure 1). The inner lumen accepts a 0.038-inch guidewire. The diameter of the unexpanded balloon is approximately 22 Fr (7.3 mm) and is 8 cm in length, with an inflated diameter of 20.5 mm (60 Fr) at the maximum inflation pressure of six atmospheres (ca. 600 kPa). The distal and proximal ends of the balloon are delineated by two radiopaque gold markers.



Figure 1: An implanted Ultraflex prosthesis with incomplete unfolding at the proximal end in an extensive stenosis. Left: before balloon dilation, right: after balloon dilation using the Olbert Catheter System.

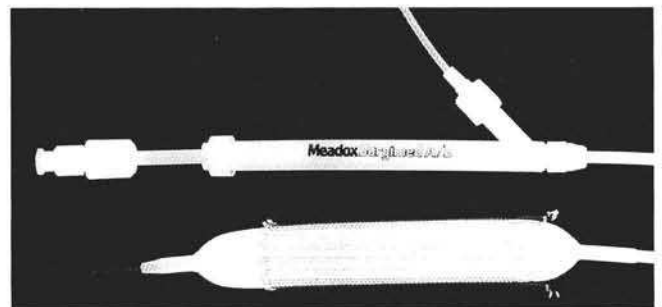


Figure 2: Olbert Catheter System (Meadox-Surgimed, Denmark) for esophageal dilation. The inflated balloon is seen inside an Ultraflex prosthesis, expanding it over its whole length with the 0.038-inch guidewire in the inner lumen.

In ten patients suffering from malignant esophageal stenoses consistent balloon dilation of the implanted stent was carried out after implantation of an Ultraflex prosthesis that failed to expand adequately. In all cases, adequate complete expansion of the prosthesis, as well as secure fixation without prosthesis dislocation or esophageal dehiscence, was observed. In our view, regular balloon dilation using this new balloon catheter system is advisable when the guide wire is still in position in order to guarantee early functionality and secure fixation of the prosthesis in the tumor stenosis when an Ultraflex prosthesis initially fails to expand completely.

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References

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