I thank Terzi et al. [1] for their comments on our article [2] and also thank EJCTS for giving me this opportunity to answer this question.

Bronchopleural fistula (BPF) is a most serious complication in patients with tuberculosis-destroyed lungs who have undergone pneumonectomy. Halezeroglu et al. [3] consider that tuberculosis and preoperative empyema lead to BPF. We believe that the risk factors for BPF are the surgical suture technique, endobronchial tuberculosis, multidrug-resistant tuberculosis and pleural space infection, although postoperative BPF after pneumonectomy for tuberculosis-destroyed lungs has been decreasing steadily. The prevention of postoperative BPF in patients with tuberculosis-destroyed lungs is very important in chest surgery.

The surgical process for a bronchial stump includes suturing and protection. The suturing includes full-thickness suture, stapler suture and so on. Pleural tissue, pericardial tissue and muscle flaps are used to protect the bronchial stump. But when a tuberculosis-destroyed lung is combined with endobronchial lesions, the suture line of the full-thickness suture and the stapler of the stapler suture for endobronchial tuberculosis may cause a ‘drainage effect’, which could lead to an infection in the chest. So, we think that the ‘drainage effect’ may lead to a BPF. Endobronchial tuberculosis has been demonstrated in up to 18% of tuberculosis patients. Vester et al. [4] think that the stapler is contraindicated when the bronchus is thickened, inflamed or of insufficient length. Thus, we think that the way in which we suture is more important than how the bronchial stump is protected. We suggest that the muscle flap that Terzi et al. [5] use to protect a bronchial stump could be used in the repair surgery after BPF.

The extramucous suture technique for bronchia is a method that does not cross the bronchia mucous. In 1963, Xin et al. [6] reported 509 cases (including 487 of pulmonary tuberculosis and 22 of pulmonary suppurration) who underwent pulmonary resection. For the extramucous suture in a bronchia group of 200 patients, the incidence of BPF was 0%. For the full-thickness suture in a bronchia group of 200 patients, the incidence of BPF was 3.0% (six cases). For the stapler suture in a bronchia group of 109 patients, the incidence of BPF was 4.5% (five cases).

The way we choose to suture is according to the situation of the mucous membrane. In our hospital, the extramucous suture technique has been routine for patients with endobronchial tuberculosis for half a century, and the incidence of BPF is very low. But reinforcing the bronchial stump with the surrounding tissues can decrease the incidence of postoperative BPF in tuberculosis-destroyed lungs. In addition, standard pre- and postoperative antituberculosis treatments and a careful operation often lead to satisfactory surgical effects.

When patients suffer from multidrug-resistant pulmonary tuberculosis and endobronchial tuberculosis, selective operation indication, adequate preoperative antituberculosis treatment and endobronchial ultrasonic atomization are needed.

REFERENCES


LETTER TO THE EDITOR

Is a radially self-expanding valued stent with neochordal support enough for better fixation in the mitral position?

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The publication by Iino et al. [1] highlights their investigation of the outcomes of a new surgical approach for mitral valve replacement with a self-expanding valued stent with neochordal construction in the pig heart. Iino et al. performed a mitral valve replacement with the valued stent in six pig hearts by means of the transapical implantation technique. Afterwards, they assessed haemodynamic stability and valve function, immediately after implantation (n = 6), 4 weeks (n = 4) and 8 weeks (n = 1),
thereafter using transoesophageal echocardiography, ventriculography and cardiac computed tomography. Four of six surviving pigs were sacrificed at 4 weeks after implantation and one at 8 weeks thereafter. One pig died due to an unrecognized valved stent malpositioning that occurred 4 days after implantation. All the animals exhibited normal haemodynamics immediately after mitral valved stent implantation and maintained stability for 6 h of monitoring. They claimed that all animals had been implanted with a bovine pericardial valved stent without any technical failures. The haemodynamic results were good enough. However, the question to be clarified is if the fixation technique of the valved stent will be enough for a better fixation in the long-term follow-up.

The mitral valve apparatus does not have a whole anatomical annulus. It is actually a discontinuous band of a connective tissue that exists only in some parts of the attachment of the posterior leaflet [2]. This means, unlike the aortic position, using a sutureless technique in the mitral position may result in dislocation of the valved stent even if it has basal neochordal support. Since, according to Adam and Carpentier’s discussion [3], Carpentier says that the annular dilatation process is predominantly seen in the posterior annulus and it also involves the anterior part of the annulus, although to a lesser extent than the posterior annulus. There is no structure that prevents the annulus from dilatation in the sutureless transapical replacement of the valved stent in the mitral position. Therefore, left ventricular pressure in the systolic phase of cardiac cycle and even dynamic movement of the left heart may result in the separation of the annulus from the valved stent, especially in the posterior part of the annulus in the long-term follow-up.

In conclusion, it is an admirable study. We readers thank the authors for sharing their experience and knowledge of a new surgical approach to minimally invasive mitral valve replacement. The explanation of previously described points may necessitate further investigation to overcome possible fixation problems.

REFERENCES


LETTER TO THE EDITOR RESPONSE

Reply to Tavlasoglu

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We appreciate the remarks of Dr Tavlasoglu [1] concerning our experimental study dealing with off-pump transapical mitral valve replacement [2].

Dr Tavlasoglu is concerned about mitral valved stent fixation in the long-term follow-up. He explains the anatomy of the mitral annulus and refers to Carpentier who says that the mitral annular dilatation process is predominantly seen in the posterior annulus [3]. Dr Tavlasoglu hypothesizes that blood pressure and a movement of the heart during the cardiac cycle could lead to paravalvular leakage and stent dislocation.

Our group has gained experience in transfemoral and transapical valved stent implantations with short- and long-term follow-ups for many years. We have not seen any late stent dislocation so far. In contrast, the exact positioning of the valved stents and early stent dislocation and movement are the problems we have been faced with, and we still are.

Once the valved stent is in place, it will be incorporated into the surrounding structures [2, 4].

To overcome the problem of acute paravalvular leakage, our group performed studies with a self-expandable super-absorbent polymer [5]. So far, we have used this polymer in tricuspid valved stent implantation. However, it is intended to adopt this polymer to our mitral valved stent.

We thank Dr Tavlasoglu for his interest in catheter-based valve replacement and hope that this discussion will encourage more research groups to work in this field. There is still a long way to go until we reach the lofty goal of the perfect catheter-based valve replacement technology.