Is It Safe To Perform Spleen-preserving Limited DP in Borderline Malignant Pancreas Tumor?

Jin Seok Heo
Sungkyunkwan University

The spleen was once considered unnecessary for life however it clearly serve extremely important hematologic and immunologic functions. So in splenectomy state, there might be post-splenectomy thrombotic complication or infectious complication. The most feared complication after splenectomy is considered to be the overwhelming post-splenectomy infection (OPSI). Although rare, OPSI has a very high mortality (>50%) and it appears to be more frequent in pediatric patients splenectomized for hematological disorders.

An increased risk of vascular complications involving both the venous and arterial sides of the circulation may result from splenectomy. This may be due to a hypercoagulable state after splenectomy. This state probably compounded by other underlying conditions, especially intravascular hemolysis. There is substantial evidence that PAH and venous thrombosis occur at increased rates in asplenic hosts.

However, the risk of vascular complications, like as thromboembolic events and pulmonary arterial hypertension (PAH) varies greatly depending on the underlying condition for which the splenectomy is performed and whether or not the condition is associated with ongoing intravascular hemolysis.

Infections, mostly by encapsulated organisms, are the most well-known complications following splenectomy. A collective critical review of the literature on post splenectomy sepsis from 1952 to 1987 has been undertaken by Holdsworth and co-workers. The study showed that the prevalence of severe infections and deaths after splenectomy in adults is quite low. Thus the authors state that it is impossible to draw a definite conclusion whether splenectomy is associated with an increased risk for infection on the long term outcome.

However, a study published in 2014 by Kristinsson and co-workers reached different conclusions, based on the data provided in a large cohort of adult splenectomized patients, without malignancies. Thus, on the long-term outcome, the splenectomized people not only have an increased risk to develop pneumonia, meningitis, septicemia, deep vein thrombosis and pulmonary embolism but also an increased risk to develop a cancer. Furthermore, the risk of infectious complications and deaths is still increased even after more than 10 years after the splenectomy.

But septic complications decreased much for present as a result of pneumococcal vaccination, prophylactic antibiotics and prompt administration of parenteral antibiotics when fever occurs. And the risk of sepsis and death is strongly associated with the reason why splenectomy is done. Nevertheless, the preservation of the spleen, even in adult patients, appears to be of benefit not only for the early postoperative outcome but also for long-term outcome. So preservation of the spleen during DP for benign and low-grade malignant tumor of the distal pancreas appears to be worthy and should be the first option whenever it is technically feasible and it can be safely achieved.

How about borderline malignant tumor

For spleen preserving distal pancreatectomy (SPDP), the comparative studies with DPS from the literature showed conflicting results. In perioperative outcomes, the operative time was not significantly different between the groups in most of the studies. Most of the studies also did not identify significant differences between the groups regarding the intraoperative blood loss or the need for transfusions. Tang et al insisted that distal pancreatectomy with splenectomy (DPS) seemed to result in poor health condition, but in their study there were no significant differences in estimated blood loss, intraoperative transfusion, operative time, and postoperative 30-day mortality between patients who underwent SPDP and DPS.

Some studies identified higher rates of overall or severe morbidity in the DPS group. Most of the studies did not show any significant differences between the groups regarding the postoperative pancreatic fistulae or infectious complications rates. There are studies showing higher postoperative pancreatic fistulae rates after DPS or after SPDP. Furthermore, an increased risk for infectious complications in the DPS group was reported in some studies. In the present series no significant differences were observed between the groups regarding the overall, severe or infectious morbidity rates. Furthermore, no differences between the groups were observed regarding the overall and clinically relevant postoperative fistulae rates.

A comparative long-term outcome analysis between the SPDP and DPS groups was performed in several studies. Although two cases of suspected OPSI were reported in the DPS group, it is widely considered that none of the patients developed sepsis or thromboembolic complications. Some other studies showed that the newly developed or worsening diabetes were more frequently encountered in the DPS group, particularly for the patients with chronic pancreatitis.

The SPDP was presumed to delay the onset of the postoperative diabetes but some authors consider that it is not due to the preservation of the spleen but to a greater functional islet mass left in situ after SPDP. In Tang's follow-up survey, episodes of common cold or flu were apparently more frequent in the DPS group. There were significantly more patients in the DPS group who felt fatigue (P=0.0481) and poor health condition (P=0.0371). Diabetes aggravated more frequently in the DPS group than in the SPDP group (P=0.0361). Seoul national Univ. data also showed that there is no difference between two groups for postoperative DM. In the present series no differences between the groups were observed regarding either the new-onset or worsening postoperative diabetes rates and this might be explained by the fact that the length of resected pancreas was not different.

Zhigang He conducted Meta-analysis with 11 non-randomized control studies. And they also showed that there was no differences respect to operative time, operative blood loss, requirement for blood transfusion, pancreatic fistulas, thrombosis, post-operative bleeding, wound infections and re-operation rates.

Potential curative treatment of pancreatic carcinoma can only be achieved with complete surgical resection despite the poor prognosis. If cancer is the indication for distal pancreatectomy, splenic preservation may not be appropriate due to the potential oncologic advantage of removing the lymph nodes in the splenic hilum and along the splenic vessels.

Imaging modalities used in the diagnosis and determination of resectability include ultrasonography (US), computed tomography (CT), and magnetic resonance imaging (MRI). Bipat performed a meta-analysis on the literature to compare US, CT, and MRI. For diagnosis sensitivities of helical CT, conventional CT, MRI, and US were 91%, 86%, 84%, and 76% and specificities were 85%, 79%, 82%, and 75% respectively. The malignancies represented the indication for SPDP in around 6% of the patients from the literature. If the indication was confined to the borderline malignant pancreas tumor, the malignant part might be more lots.

So I think SPDP should remain for benign or low malignant pancreas tumor. And splenectomy has to be carried out having the possibility of the malignant in borderline malignant pancreas tumors