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LETTER TO EDITOR

Laparoscopic cholecystectomy surgery model's system idea for multi-dimensional multi-angle reduction of bile duct injury: A surgeon's experience☆

Dear Editor,

We have recently read the article "Rouviere's sulcusd Aspects of incorporating this valuable sign for laparoscopic cholecystectomy" published in your journal by Stuart Lockhart et al,[1] from a Medical School, Trinity College, Dublin, Ireland, in which reported Rouviere's sulcus provides an easy reference point for safe laparoscopic cholecystectomy (LC). It can be used to facilitate identification and dissection in Calot's triangle, so ultimately helps reduce bile duct damage. To date, biliary tract injury occurs to LC surgery for various reasons, and sometimes it can be a catastrophic complication.[2] Therefore, it is necessary to find ways to reduce such damage. We believe that the establishment of certain surgery models system idea in multi-dimensional and multi-angle is critical for reducing bile duct damage.

Here we would like to describe our clinical experience in LC which could reduce bile duct damage. Please use the hepatoduodenal ligament that extends downward from the ligament of the liver as the baseline. In our surgery, be careful not to find the cystic duct in the left direction beyond this line. Main operating hole position selection need special instructions here, the best poke-out location on the right edge of the ligamentum teres hepatis and in principle the vertical plane formed by the trocar lie in the plane of the gallbladder bed; on the one hand that will not affect operation from the ligamentum teres hepatis, on the other hand, it can guarantee the operation while shoring up the liver to reveal the surgery horizon easily. Then start the operation to build the model. 1. Anterior triangle of gallbladder as the center, thin opening a layer of serosa with an electrocoagulation hook to the right-up closely between the liver and the serosa, This process continues until the serosa at the body of the gallbladder. Remember that a thin layer of "open book-like" operate where cut a surface rather than a point, and expose the three-tube relationship as much as possible. When the electrocoagulation hook separates the tissue, try to see the instruments through the tissue as much as possible, we suggest that separate and cut soft tissue first, do not break easily with firmer bands-like tissue to prevent accidental injury. 2. Opening the partial serosa in front of the bile duct to the left-down, and show the anterior wall of the main hepatic duct. 3. Opening the serosa of the posterior triangle of gallbladder where fully cut to the right along the serosa gap opened by the front wall.4. Return to the anterior triangle, we respectively separate the connective tissue in front of the cystic duct and gallbladder artery little by little to show the anterior wall.5. Our surgery models system concept considers that the bile duct and right hepatic artery as a fish spine, meanwhile the cystic duct and cystic artery as fish thorn. Just like boning fish, opening the tissue around the "fish thorn" with a thin layer in the direction of it and hold the range is large enough. We are better establishing the concept of "fishbone skeleton", separate and cut in the desired direction, instead of blind operation of electrocoagulation hook (Fig. 1). After this, the surgical procedure is the same as the routine.

It is important for surgeons to pay attention to the surgical details of LC. Consider about the level of line, surface and system, we establish the model concept from a multi-dimensional and multi-angle perspective, and believe it is very helpful especially for young surgeon.

In summary, the essence of surgery lies in adequate anatomy and exposure.[3] We believe on the basis of full

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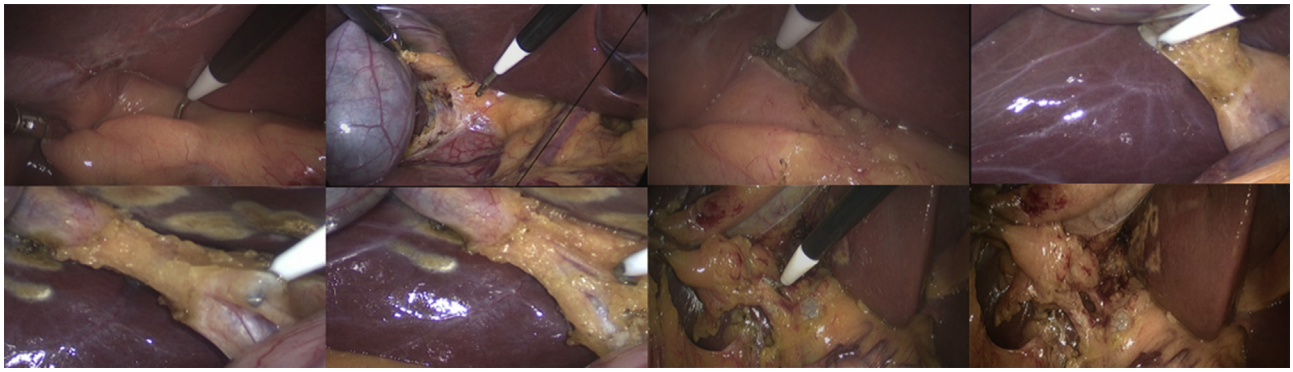

Figure 1 Schematic illustration of Laparoscopic cholecystectomy.

understanding of the anatomy, with the correct standard of surgical methods, precise operation, full exposure can eliminate unnecessary complications. Of course, we need more surgery and experience exchange to improve our preliminary results.

Conflicts of interests

All the authors have no potential conflicts of interest to disclose.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.asjsur.2018.10.012.

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