

Three dimensional laparoscopy – maiden experience during an adrenalectomy in Sri Lanka

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Abstract:

We describe our maiden experience of laparoscopic right adrenalectomy using three dimensional vision systems experiencing several advantages as a team experienced in laparoscopic adrenalectomy in Sri Lanka.

Introduction

We report our first experience in laparoscopic adrenalectomy using three dimensional (3D) vision systems performed for a non secreting right sided adrenal tumour. To our knowledge this is the first reported case in Sri Lanka.

Positioned in the left semi-lateral (70 degrees) decubitus position, ports were placed as for two dimensional (2D) laparoscopy with two 10mm and two 5mm ports two finger breadths below the costal margin as shown.

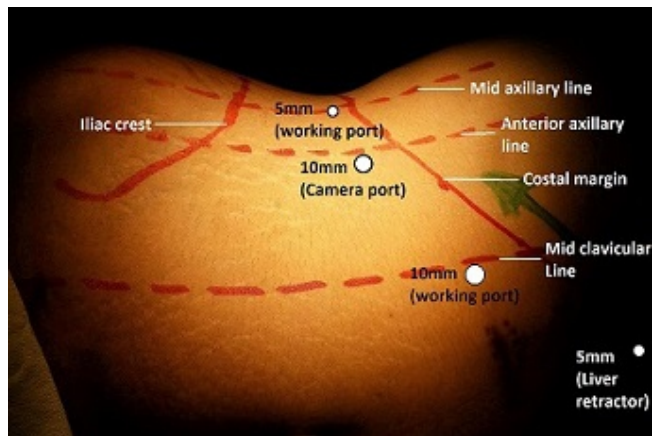


Figure 1. Positioning of ports with anatomical land marks in the right flank as viewed from front

A 3D laparoscopic camera was introduced via the 10 mm port at the anterior axillary line. Liver was retracted superiorly with a liver retractor introduced via the epigastric port. The 10mm port at the midclavicular line and a 5mm port on the

mid axillary line were used as working ports. All surgeons wore 3D glasses. Gerota's fascia was opened over the left edge of the mass with hook-diathermy. IVC was identified and the right adrenal vein was clipped and divided. The tumour was mobilized off the IVC completely. Numerous arteries supplying the gland were cauterized and the gland was dissected free after opening the fascial fold laterally.

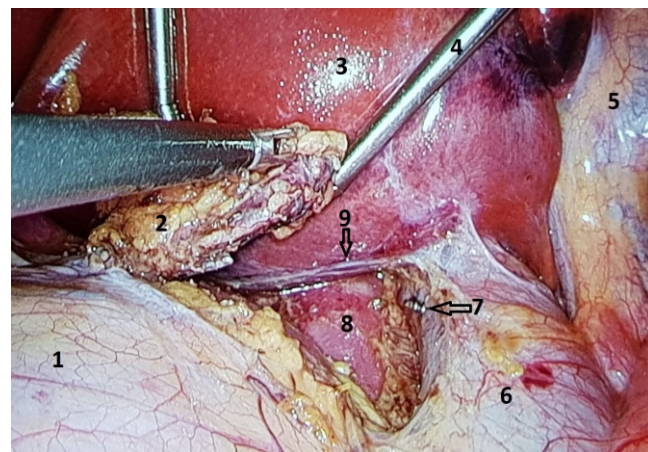


Figure 2. Laparoscopic view of the partially mobilized right adrenal mass with its surrounding relations. 1- Right Kidney, 2- Right adrenal gland, 3- Right lobe of liver, 4- Laparoscopic liver retractor, 5- Gall bladder, 6- Inferior vena cava, 7- Right adrenal vein (clipped), 8- Bare area of the liver, 9- Right Coronary ligament

Three dimensional vision gave better spatial orientation due to good depth perception that was pivotal for both the camera holding surgeon and the operating surgeon specially when dissecting the right adrenal vein close to IVC.

Discussion


Laparoscopic adrenalectomy was first described by Gagner et al in 1992 [1]. It became the gold standard for adrenalectomy in most benign conditions.

In 2D laparoscopy, absence of depth perception and resultant spatial disorientation are felt as limitations by most surgeons in the early phase of their learning curve. This affects hand-eye coordination and potential injury to adjacent organs. With

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experience, many surgeons use certain visual cues to aid better orientation to overcome this limitation.

In two recent randomized prospective studies, 3D laparoscopy was shown to have a significant reduction of operative time and number of repetitive errors and improved accuracy of laparoscopic skills in novices [2,3]. It is also shown to reduce the learning curve of complex laparoscopic tasks on a prospective study [3].

In a recent systematic review by Fergo et al [4] on comparison of new generation 3D laparoscopy versus 2D laparoscopy in abdominal surgery found that 9 of 13 trials (69%) and 10 of 13 trials (77%) found a significant reduction in performance time and error, respectively.

To our knowledge, there is no published data on adrenalectomy with 3D laparoscopy. According to the authors, 3D vision was more useful during adrenalectomy compared to other procedures, as accurate orientation is crucial for safe clipping of adrenal vein and dissecting the gland off IVC. Furthermore, an experienced surgeon operating the camera was felt essential to operate the flexible tip of the 3D camera.

Three dimensional vision systems brings up new questions. Is it actually better or just an attractive option? Is it more comfortable to the surgeon? How does it affect the learning curve of surgeons? Is it cost effective? Well conducted unbiased prospective studies should help establishment of its place within the armamentarium of laparoscopic surgery.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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