In efforts to improve lymph node harvest, completeness of colon cancer resection, and to adequately stage the patient, many units around the world advocate complete mesocolic dissection (CME) and central vessel ligation (D3). Our concept of central vessel ligation (D3) is where dissection carried along the superior aspect of superior mesenteric artery (SMA), superior mesenteric vein (SMV) and ligation of colonic vessel high. This ensures complete removal of lymph nodes that may harbour tumour. However, we need to understand that there is significant variation in definitions D3 vascular ligation. The initial D3 nodal dissection proposed by Hochenberger et al. (1) involved kocherized the duodenum, and takedown of the mesenteric attachments to the duodenum, uncinate process of the pancreas, and removal of lymph nodes along the gastroepiploic artery including the infrapyloric area, with complete dissection of the fatty tissue along the superior border of SMV and SMA. Japanese Society for Cancer of the Colon and Rectum D3 dissection however, omits duodenal kocherization, and dissection of the gastroepiploic and infrapyloric nodes (2). Any survival advantage of duodenal kocherization is debatable, particularly in the context of increased surgical complication that can occur from this extended dissection. CME by preserving and keeping visceral fascia intact by sharp dissection along embryological planes has shown to improve 5-year survival (3) and disease-free survival (4) when compared to non-CME (conventional, non-standardized resection) (3). However, what defines a proper CME is still unclear and this calls for proper pathologic reporting of specimen quality, similar to mesorectal reporting. Factors that are needed to be considered are proximal, distal resection margin, intact mesocolic package, and length of mesenteric tie.

Potential benefits of performing extended lymphadenectomy (D3) are complete removal of tumour bearing lymph nodes (1,5-8) and removal of potential ‘skip’ (9,10) lymph node metastasis. Approximately 3% to 5% of right colonic tumours metastasize to central mesocolic lymph nodes. Studies comparing D2 to D3 dissections have shown that tumours are upstaged from node negative disease to node positive diseases in approximately 5% of cases of D3 dissection (9,10). However, whether the survival difference seen in some of the studies with CME and D3 dissection compared to conventional and D2 dissection is just due to removal of central nodes is unknown, particularly in western population where majority of patients get D2 dissection. Studies that compared D2 to D3 lymphadenectomy have shown a survival advantage with D3 lymphadenectomy (1,11-13), however, majority of studies on this topic are older and do not adjust for modern chemotherapy regimens. Based on current data we can conclude that there is a survival difference from central mesocolic excision (standardized) but whether there is additional benefit from D3 dissection, particularly...
in western population is difficult to determine (14). We need a randomized control trial with proper assessment of pathological specimen and appropriate use of modern chemotherapy regimens to determine true benefit from extended lymph node dissection.

Does approach on how you do CME and D3 right hemicolecotmy matter? Now that minimally invasive techniques are well established in colon cancer surgery. Several studies have compared robotic with laparoscopic right hemicolecotomy (15) and found to have similar surgical and oncological outcomes. Lee et al. have found that robotic D3 surgery is safe and feasible when compared to laparoscopic D3 right hemicolecotomy (16). Meta-analysis comparing laparoscopic with robotic right hemicolecotomy found robotic surgery to be associated with reduced blood loss, reduced postoperative complications, faster recovery of bowel function, however longer operative time (15). Robotic surgery also has some added advantages such as 3D magnified vision, greater range of motion, stable camera platform, and now ability to do multiquadrant surgery (with XI system) without having to redock (17). However, use of robotic surgery comes with added cost which is certainly a huge factor in countries with public health system. The advantage of suprapubic port placement with robotic right hemicolecotomy using the da Vinci Xi system, intracorporal anastomosis and then retrieval of specimen through a pfannenstiel incision as described by Lee et al. (16) is certainly appealing particularly with regards to the amount of postoperative pain patients may have, and rate of incisional hernias (18-20). However, this can also be achieved by doing an intracorporal anastomosis and specimen extraction through pfannenstiel incision using laparoscopic platform as well. The practice of intracorporal anastomosis, particularly in advance cancer is questionable (16) study and whether this technique is oncologically safe is yet to be determined. It is difficult to draw any conclusion based on outcome data on novel robotic right hemicolecotomy via suprapubic approach as described in Lee et al. (16) study, mainly because of small number of patients in this study (n=5) and low body mass index (BMI) of patients operated on (BMI, 24.2). Even though the authors concluded that this approach can be performed successfully in selected patients, they did not describe how they selected those five patients. However, this study includes a good summary on technique of robotic right hemicolecotomy via suprapubic approach, whether this approach becomes popular in future will likely depend on long term oncological data, technical feasibility in obese patients and ultimately cost of the procedure.

In conclusion, right hemicolecotomy with CME and D3 dissection has shown to have survival advantage, however there are limitation with regards to standardization of technique, specimen reporting and complication profile particularly in western patients. Whether this approach becomes standard of care in future will depend on evidence from three ongoing adequately powered randomized control trail (21-23).

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Footnote

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