

PhD in Bioengineering and Medical-Surgical Sciences

cycle XXXVII

(jointly activated by Università degli Studi di Torino and Politecnico di Torino)

Sentinel Lymph Node in Rectal Cancer: Role of Transanal Endoscopic Microsurgery

Funded by	Università degli Studi di Torino / Fondazione Compagnia di San Paolo
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Context of the research activity	<p>Early rectal cancer forms a heterogeneous group due to the different risk of loco-regional lymph nodes metastases, which increases with submucosal invasion. In case no adverse features such as high grade or lymphatic/vascular invasion are present, local excisional procedure such as Transanal Endoscopic Microsurgery (TEM) is appropriate as it can provide similar oncological results in early rectal cancer with no lymph nodes involvement compared with standard surgical treatment. The lack of adequate lymphadenectomy still represents the main concern of this approach as metastatic spread to regional lymph nodes is one of the most important prognostic factors and determines the need for adjuvant chemotherapy. The sentinel lymph node (SLN) is the first lymph node that receives lymphatic drainage from a tumor, and identification of the SLN and analysis for tumor involvement should predict the status of the remaining lymph nodes. Ex vivo SLN mapping using an optimal lymphatic tracer, such as indocyanine green, blue patent V or Nanocoll-Tc99, allows real-time imaging of lymph flow and identification of the SLN in colon and rectal cancer specimens. SLN identification and sampling after preoperative transanal injection is surgically feasible and safe in patients with rectal cancer.</p>
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Objectives	<p>To evaluate the technical feasibility of SLN identification and removal by TEM procedure ex vivo on TME specimens cT lower than 4 in order to achieve a better stratification of patients with rectal cancer and to avoid radical surgery in those who does not require a TME. The identification process will involve the pre-operative use of ICG and/or blue patent dye and/or Nanocoll-Tc99. Subsequent subgroup analysis will be performed to identify the technique or the combination with highest success rate. The report of SLN status will be compared with the definitive pathological response on TME specimen, in order to assess the accuracy of SLN as an N-status predictor. A multidisciplinary team, involving surgeons, radiologist, nuclear medicine physicians, pathologists and statisticians, will be set up. This study will include every patient with rectal cancer cT lower than 4. Technical success is defined as the pathological proof of SLN removal. Clinical success is defined as the match for the SNL status and the definitive pathological report on TME specimen.</p>
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Skills and competencies for the development of the activity	<p>The characteristics of a successful candidate are:</p> <ul style="list-style-type: none">• Expertise in General surgery with specific competence in gastroesophageal and rectal cancer• Expertise in mininvasive surgery• Expertise in Transanal Endoscopic Microsurgery;• Proactive approach to join a three-years research program and carry out interdisciplinary research.
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