

Laparoscopic staging of gastrointestinal tumours

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Proper staging of digestive oncologic diseases is defined as being a crucial step for the correct management of those problems. Only with a complete knowledge of the staging of the disease can the appropriate treatment be applied, be it surgical or medical.

Many of the approaches for this pre-operative (or "non operative") staging are based in imaging exams that have shown, up till now, some degree of failure in its results. This is due to a lack of definition, both in dimensions and in histology. The technical characteristics of the equipment have seen a constant improvement but we are still far from having these definitions given only by imaging.

Although laparoscopic US was first mentioned in 1963 (1), the first reference to the use of laparoscopy for staging is from 1971 (2). In 1986, some more interest was shown and it started, as well, to show some diagnostic superiority (3)

The rationale for staging is based in the knowledge of the correct TNM stage. Obtaining in due time adequate information that would allow the application of the most appropriate therapy does this. On the other hand, we can also obtain a better prognosis for the situation; a correct staging allows R0 resections with a supposedly more appropriate management of the situation.

This also offers better QoL for the patient, avoiding more aggressive procedures, eventually unnecessary, and giving some shortening in the hospital length of stay.

Over-staged tumours have under-treatment by having a management which is not aggressive enough or is not even applied; on the other hand, under-staged tumours will have over-treatment, with too many non-radical surgeries being performed or with patients undergoing unnecessary laparotomies.

Another question has to do with the laparoscopic approach. Why shall it be laparoscopic?

Several factors are already well known enough as to justify this: It is less aggressive and allows better management of QoL, also diminishing post-operative pain and discomfort; early identification of eventual lesions non visualized during the pre-op staging is possible in an easy way and a more adequate management of diagnosis and therapeutic measures is achieved, allowing at the same time the execution of palliative procedures.

It is necessary to have perfectly clarified the notion that none of these attitudes goes without a very thorough workout of the usual steps in patient diagnosis: clinical history, laboratory and observation data, imaging exams, endoscopies, CT scans and MNRs, trans-abdominal and endoscopic ultrasonographies, scintigraphies and FDG-PET, as well as other exams are mandatory to have the overview of the patient as complete as possible, before going to the surgical staging.

With a carefully applied surgical technique, delicate and often lengthy, always with the use of

LUS (Laparoscopic UltraSound), either just before the major surgery programmed, during the same anaesthesia, or as a completely separate operation, the laparoscopic staging tries to obtain an observation of the whole abdominal cavity with a characterisation of the known lesions and search for unknown lesions, like peritoneal seeding or occult metastases. The completion of the process is done with the help of lavage, cytology and directed biopsies and node sampling, with access to all areas to be explored obtained with a careful constant positioning of the patient accordingly to the areas to be observed, and with opening of lesser sac and retroperitoneum and Kocher's maneuver, if found necessary.

Staging for HBP diseases

Liver lesions are located in, or visible at, the liver surface in 80 to 90% of the cases. This fact alone simplifies the staging for these lesions and completely justifies its use. It is necessary to evaluate the resectability, as well as the existence of distant spread and of secondary, not previously known, lesions.

Many series, like Gozzetti's, from 1986, show the impact of the discovery of new lesions, more with the use of intra-operative US, and its importance for changing surgical tactics, defined pre-operatively (from 80% of the existing lesions known previously by imaging, to 98% after the use of US, with a change of tactics in 51% of patients). Machi's series, from 1987, is even more striking with a difference in finding lesions from 50% pre-op to the same 98% at staging with US. Similarly, other series, like Vollmer's, Johns's, Babineau's and Barbot's show the advantage of avoiding laparotomy in 17% to 63% of patient's by showing irresectable situations at staging.

In what concerns acuity of US to detecting liver lesions, again Machi (1987 and 1991), shows a difference from pre operative US to per operative, of around 74% to 94%.

For the pancreas, high resolution CT scans have an almost 100% specificity on local non resectability but, nevertheless, up to 40% of patients have irresectable lesions when submitted to laparotomy and diagnostic laparoscopy shows up to 30% of the lesions that cause these patients to be irresectable. This figures alone, again, completely justify a policy of systematic laparoscopic staging for pancreatic tumours. Resectability rates, after image and laparoscopic staging, rise to 75 to 92% as a response to this policy.

Staging of gastric tumours

The field is also being changed in what concerns the correct staging for malignant gastric disease allowing the choice for appropriate management of individual situations. It is necessary to identify "curable" or - at least - "operable" patients, avoiding unnecessary laparotomies. The number of complications in patients with metastatic disease, submitted to resection surgery is quite high (up to 23%) with an operative mortality of up to 21% (4).

It is also known that 15% to 25% of patients with advanced gastric cancer already have liver (and/or peritoneal) metastases when diagnosed and that most of these metastases are not detected by the existing imaging techniques (5), with CT and US having low sensitivity in detecting node and peritoneal involvement, as well of small liver lesions (6)

For instance, Skelly (7) in a series of 50 patients identified by laparoscopy 7 ascitis, 2 liver metastases, 7 significant lymph nodes, 5 serosal involvement and 5 peritoneal metastases, none of which identified by CT. The fact that there are no studies on MNR or FDG-PET, leaves some doubts on how these figures could change, if complete pre-operative staging with these imaging methods was done.

Still, with CT and US pre operatively and laparoscopic staging, Bold (8) found that from 86 patients considered resectable by CT and US, 18% had non resectable metastases at laparoscopic staging. Tsoulias (9) states that laparoscopic findings changed surgical treatment in 37% of his cases, with, in 70 patients, 17% peritoneal metastases being found, which not visible by other means of staging.

A much higher sensitivity, specificity and acuity is found for laparoscopy, when compared to pre-operative imaging, both for detecting peritoneal metastases, determining local extent of the tumour or for staging results in general (10-12). As well, for detecting peritoneal metastases, liver metastases, T stage and N stage, laparoscopy and specially laparoscopy with laparoscopic US have a significantly better acuity compared to endoscopic US, transabdominal US and to CT (3, 13-18).

Lymph node metastases are of difficult and of important detection; endoscopic ultrasono-

graphy has 60% acuity for its detection (5), while laparoscopic US has an 88% sensitivity rate (19). Several other authors agree with the important information added by the use of LUS (20-22).

These facts are part of the controversy around staging of gastric cancer; there are some contradictory opinions in the literature: some authors consider that it overstages patients and that only in rare cases the staging previously defined by CT and by US is lowered by the laparoscopy, although, in one case, the same authors also recognise the avoidance of unnecessary laparotomies in 7% of the patients, (5, 23, 24). Curiously, despite these opinions, one of the groups, in the results of a protocol (26), mention a change in previous diagnosis in 46% of patients and a change in management in 40.5%.

The detractors of the use of staging, or of diagnostic laparoscopy, argue that most patients will have a laparotomy anyway and will not benefit from this type of staging, that the costs are important and that the results vary with the team's experience (27-30). The proponents contra-argue with the fact that without laparoscopic staging many patients will have a laparotomy only to realise that curative surgery is not possible, that the costs are compensated by the avoided laparotomies and that only by doing it on a regular basis the teams get experience. (28, 31-34); it is accepted that the appropriate timing for the execution of laparoscopic staging is a question not solved.

Staging for oesophagus and for colon cancer

For the oesophagus, the situation is mostly based in thoracoscopy evaluation and not in the laparoscopy. The inspection of the hiatus and of the nodes close to the celiac axis are very important but also difficult.

In the colon, studies are being done, concerning the sampling of lymph nodes and of the sentinel lymph node, as well as trying to determine its real importance. Obviously, laparoscopic staging with LUS for detection of liver metastases is important for the complete staging and for management decision, having the same detection rates as mentioned before.

In conclusion, it can be accepted that the technique of laparoscopic tumour staging needs careful execution and absolutely demands the use of LUS. Its "execution timing" is not defined, having two options: either in the same anaesthetic time, following the staging surgery with the therapeutic one if there is indication, or doing it in two different sessions, allowing different management of operative timings and of considering the findings and the final results of pathology. Although the mentioned procedures vary from only simple observation and biopsies to very extensive dissections, it is clear that, to be done, laparoscopic staging must be exhaustive. The fact that benefits are proved and that management patterns are changed by the use of the technique seems to be the clear indication to keep using it in a thorough and extensive way, if not routinely.

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