# Editorial Temático

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## Bile duct injuries

## *Lesões das vias bilares*

This issue of the Revista Portuguesa de Cirurgia publishes an interesting paper on Bile Duct Injuries (BDI). It is a Revision paper with the authorship of a Masters student, under supervision (and co-authorship) of a Specialist in Surgery.

The most interesting part of this publication – the Journal has published several other papers on this subject – regards the calling of attention to a complication that, far from it, stays in the front line of the problems brought by Cholecystectomy, mainly Laparoscopic. The high number of papers regularly published in world literature demonstrates this point clearly.

Langerbaeck, presented the first report of a successful Cholecystectomy in 1882 and, already in 1899, there was a report from Kehr, of a repair of a lesion, done over a rubber tube, without a final good result.

In fact, I believe, the true incidence is unknown. Despite many reports and studies about it the general belief is that there are a great number of lesions – minor and major – which are not reported; this "hiding" attitude is, very probably, more common than thought and this happens all over the world. Not only there is a try to avoid litigation but also the "shameful" label of being considered "not so good surgeon".

What can be said is that there are four main culprits for the bile duct injuries (BDI): improper training, working under sub-optimal circumstances, lack of knowledge and, more times than desirable, unfortunately, excess of confidence.

The rules regarding proper education and training, before starting a "solo" practice of Laparoscopy are well established and there are many programs directed to these purposes. Too many, probably and most of them not validated. LSS (Laparoscopic Surgical Skills) is the validated model of this training, comprehensive and European; this type of programs shall be adopted in a widespread way through European countries and Surgical Scientific Societies, to establish a good basic standard of practice [1].

Included in this "Prevention Mode" is the knowledge of the anatomic variations in the liver hilum; the lack of knowledge is not an acceptable excuse of any kind and is to be considered malpractice. This knowledge is part

of the surgical training and education, regarding not only biliary and liver surgery but also surgery in general; important is the high number of anatomical variations existing in these structures.

Other conditions, besides the surgeon, are important. First of all, a proper pre-operative workout: it is not rare that the patient enters a state of acute cholecystitis in between an early pre-operative consultation and workout (blood tests and Ultrasonography) and the date of scheduled surgery, making surgery very hazardous or even dangerous. The cases during which there is absolute need of exceptional attention because of an increasing danger of lesions are acute cholecystitis, adhesions and when bleeding occurs. Also important is to be sure that all Operating Theatre conditions are existing and functional; proper – and well-functioning – equipment, nursing and auxiliary staff familiar with the procedure and equipment and an anaesthesiologist experienced in laparoscopy.

The surgeon has to be used to the equipment in the room as it has been shown many times that this lack of familiarity is one of the reasons of several "accidents". Disposable or reusable trocars and instruments, insufflator, proper optical and light system, irrigation and suction devices, very often not powerful enough, and other auxiliary devices are all important.

Careful dissection is one of the main points regarding the maintenance of security, of good results and of prevention of injuries. Strasberg and Hunter have, quite a few years ago now, promoted a technique of dissection, the "Critical View of Safety" (CVS) which seems to provide the safety necessary for proper laparoscopic cholecystectomy without risking lesions to the main anatomical structures in the area. Long-standing problems in the anatomical area, with successive inflammation episodes, lead to "fusion" of structures causing big difficulties in identification and making an "easy" cholecystectomy a "difficult" one. The CVS approach, opposed to the "Infundibular Technique", is based in a safer dissection, avoiding the risk of the 360º dissection of the infundibulum, coming from above, and leading, sometimes, to an "Error Trap", when the vision of what is thought to be the cystic duct can be provoked by the dissection itself being the Common Bile Duct. Strasberg insists that CVS approach is a method of Identification and not of Dissection [2,3].

Another polemic issue regards the use of intra-operative cholangiography (IOC) in order to prevent the incidence of BDI and/or to allow early recognition. Mirizzi, in Argentina, performed the first IOC, in 1932.

There are many contradictory opinions and its use is far from consensual. Many papers exist defending one or the other side; the controversy arose with the generalisation of the use of the Laparoscopic approach. It seemed almost agreed upon in the times of "Open" cholecystectomy. Nevertheless, cholangiography is an invasive examination, imposing the injection of dye and the use of radiation; this, besides not being – under my point of view – proven that it can really prevent the incidence of BDI. In fact, it can happen two other things: showing the lesion that has already happened (in this case, it has a demonstrational value and usefulness) or, being by itself a factor of lesion by cutting, introducing a probe and clipping an important duct. Cholangiography is not a substitute for meticulous dissection, and injuries to the CBD can occur before cystic duct dissection reaches the point at which cholangiography can be executed [4]. Its use has not, apparently, reduced the incidence of BDI but has diminished the seriousness of the lesions; this, of course, if it is properly interpreted and, it is known, misinterpretations can also occur [5].

Recently a new technique started to be used and – apparently – it has shown its practicality, besides being only moderately invasive; this in the sense that it is necessary to inject, in a peripheral vein a fluorescent product, non-harmful. Under normal operating conditions, changing only the type of light being used (modern light sources can do that) the anatomy of the bile ducts and blood vessels can be visible, allowing definition of structures and clarification of views, if considered necessary.

Another "explanation" for the problem is related with the, so-called "Learning Curve". The problem itself is complex and will be left to another opportunity but, only talking about BDI, proper training and education are a capital issue and, as mentioned, it is necessary to keep full attention to this sector. Human errors can happen by multiple reasons but, the more serious one, also because not so well known, is the visual failure or misguidance. This has been shown in a study by Way showing that 97% of the lesions in BDI are caused by perception errors [4]. The same problem can affect the interpretation of the image of cholangiograms. Surgeons must not have preconceived ideas about what they are viewing and about structures. The brain keeps "explaining" the person (in this case, the surgeon) that what was seen first is the reality, even if it is not so; trying to minimise this problem, the suggestion is that surgeons shall confirm what they are "viewing", by asking other people in the Operating Theatre if they agree; "when in doubt, ask".

Management of BDI, after diagnosis, is another challenge and another problem (diagnosis of the location can also be problematic). Unfortunately, there is a "temptation" of trying to have the situation solved at the same institution and, very often, by the same surgeon or team who caused the lesion. The results are bad; it has been shown that a repair done by the primary surgeon (the one who performed the first surgery) is only successful in 11 to 17% of cases, while, if performed by a tertiary care, specialised surgeon or team has a rate of success of more than 90% [4].

Therefore, the right attitude and the best option for the patient, and to have a good control and resolution of the BDI, is to refer the patient to an experienced team. "The best opportunity to repair an injured bile duct is the first attempt" [7]. Atop of all these problems, and justifying even further the reference to an "Expert Centre", are the concomitant vascular lesions existing, which incidence is grossly underestimated reaching 71% with Bismuth IV injuries [8]. Treatment options depend on the seriousness of each case and can include Liver Transplantation.

Non-surgical options can also be proposed but we will not discuss details of possible repairs. What cannot, ever, be forgotten is that we are dealing with a benign disease – in first place, when doing the initial cholecystectomy – to which, if necessary, there are therapeutic alternatives. Besides, BDI are economically and socially important by the impact they have in society; patient's (and family) economic disturbance, taking people away from normal life, sometimes for very long periods and dragging the family and emotional support along cannot be forgotten. Costs of a major lesion, per patient, considering the ones that are solved with a single operation (major, but "simple"), are about 110.000 Euro [9].

In the end, the harm of an iatrogenic billiary injury exceeds many, many times the benefit of completing the cholecystectomy at any cost.

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