SURGERY/ENDOSCOPY: THE PROS AND CONS

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WHAT ARE THE DETERMINING FACTORS?
This is a regular conundrum, particularly for the less experienced clinician, but also one which ‘longer toothed’ clinicians should keep asking themselves. The main factors in consideration are discussed in this article.

Availability of Equipment
Avian surgery of any type does require certain instrumentation. For conventional surgery, microsurgical instrumentation is a great asset. The latter should have normal-sized handles with only the tips miniaturized. The handles should preferably be counter-weighted in order to minimize finger fatigue. Atraumatic tissue forceps are essential (e.g., Harris ring tip forceps). Conversely, relatively few instruments are required in an avian surgical kit; fine pointed scissors, needle holders, 2x artery forceps, atraumatic grasping forceps, and a retractor are the essentials. Spring-loaded, locking instruments will also greatly assist in preventing finger fatigue. In addition, illumination and magnification is required, as well as some form of adequate retraction system (e.g., Lone Star Retractor). Against this the endoscopy route, requires suitable endoscopes (i.e., system (eg, Lone Star Retractor). Against this the endoscopy route, requires suitable endoscopes (0 degrees [look straight ahead] and 30 degrees [look around], obturators (to gain access and protect the scope to prevent bending and rod breakage). If endoscopic surgery is contemplated, one will need biopsy forceps, grasping forceps, scissors and potentially more sophisticated instruments such as endo cautery, insufflators, and aspirators, etc.

Experience of Clinician
All surgical training, whether conventional or endoscopic, is ideally gained at conference wet labs, then reinforced with practical training on the job. Endoscopic surgery probably requires more ‘further training,’ when compared with avian conventional surgery, for the typical experienced small animal clinician. A lack of training is not a long-term reason to use one technique over another, but it may be a reason for a choice in the short or immediate term.

Size of Patient
This decision takes one both ways in different situations. On occasion, in a very small bird (say 100 g), the tracheal lumen may be too small to get an endoscope safely down. When it comes to tracheal surgery, the bigger the patient the more endoscopic surgery one can achieve. Certainly for endoscopic beginners, performing on a larger patient is far easier and hence safer; as one gains in experience and confidence, small patients also become comfortable and there is even more reason to use endoscopy on these small patients, so the iatrogenic stress and trauma caused by conventional surgery can be minimized.

Size of Access and Location of Lesions
Lesions in certain locations, e.g., anterior thoracic air sac, syrinx, and infra-orbital sinus, would be very difficult to access with a conventional surgical approach (if highly destructive access surgery is to be avoided), whilst other lesions (e.g., cloacal papilloma), lend themselves much more readily to conventional techniques.

Purpose — Diagnosis or Surgery
In general terms, endoscopy is a far quicker, safer, minimally invasive technique if one is simply making a diagnosis. The air sac system (designed with the express purpose of making life easier for avian vets) facilitates the visual examination of all internal organs; it is then only a small step further to collect endoscopic diagnostic biopsies from suspect internal organs (e.g., liver, kidney, lung, spleen, pancreas, bursa of fabricius). The only downsides of such endoscopic techniques are the reduction in size of biopsy harvested and on occasion a marginally reduced ability to ensure the biopsy is representative of the entire or suspect parts of the organ. Hemorrhage while collecting the biopsy is very rare, at least once a practitioner is experienced.

Potential Risks of Either Technique
Contamination of other structures on removal of infective material—for example, the removal of an aspergilloma lesion from the cranial thoracic air sac, which could well also have secondary bacterial infection, might be readily achieved, with minimal risk of spreading infection, if carried out by conventional methods (although such a lesion should not normally be removed until it is considered to be inert).

With regard to size limitations in relation to tissue or debris to be removed via obturator, the same applies as discussed above: if a lesion is larger than the diameter of the obturator through which it needs to be recovered, then the lesion will break up and the risk of contamination increases.

When comparing the ability to control hemostasis, serious intraoperative hemorrhage is rare, but the surgeon’s ability to deal with it may be greater if increased access is available (i.e., with conventional surgery), although the down side is that the procedure will take longer to complete. This is particularly relevant with liver biopsy, as by definition liver pathology, and hence effect on clotting factor production, is likely to be present at a time when liver biopsy is indicated.

As far as the potential for collateral damage to adjacent organs, the more visible the surrounding organs are, the less risk of collateral damage. However, conversely, the illumination and magnification provided by an endoscope is typically superior to that of conventional surgery.

With endoscopy, there may be inability to see ‘the bigger picture,’ whereas conventional surgery may allow the surgeon to see the totality of the clinical scenario, particularly where multiple organs are involved. With
endoscopy, the surgeon (particularly the less experienced) may not be aware of some issues.

The spillage of ascitic fluid from the coelom into air sac can be a problem if the endoscopic surgeon is unaware prior to the procedure that the patient has ascites. Entry may be achieved, via the air sac into the coelom, and leakage of ascites into the air sac and lung may occur before one is aware of what is happening. This is potentially life threatening.

Endoscopy can be problematic when organomegaly or neoplastic masses have deranged normal anatomic positioning.

The inability to cope if something ‘goes wrong’ with endoscopic surgery is a potential concern—although an endoscopic surgery can generally be converted into a conventional access, there may be some time delay. In the event that something goes wrong during endoscopic surgery, the ability to resolve that matter may be restricted or delayed.

There is no doubt that wounds created at conventional surgery do take longer to heal. The larger the wound and the longer healing takes, the greater the risk of wound break down prior to total healing. Conventional surgical procedures generally take longer, thereby leading to an increased risk of the procedure over all.

CONCLUSION

If endoscopy is to be utilized, the surgeon should be adequately equipped, trained, and experienced. This being so, endoscopy should be used in all situations where the overall ‘risk-benefit’ profile of endoscopy is superior to that of conventional surgery. Although there are no hard and fast rules, there are certain situations in which one would always use endoscopy, while there are others where one would always use conventional access, with residual gray areas in between where a choice will be made due to the surgeon’s personal preferences, equipment, and experience. As equipment advances and surgeon’s skills increase, it is likely that more and more procedures should be completed endoscopically. As such, clinicians should keep challenging themselves in relation to optimum techniques, rather than just repeating their previous ‘comfortable’ procedures.

Always Use Endoscopy for:
- Tracheoscopy and treatment if possible
- Coelomic (including thoracic) diagnostics, including assessment of gonadal activity
- Renal biopsy
- Sinography
- Retrieval of enteric foreign bodies if possible
- Salpingohysterectomy, orchidectomy or in immature birds
- Vasectomy in birds of any age
- Ingluvioscopy and proventriculoscopcy

Always Use Conventional Surgical Approach for:
- Where reproductive disease is anticipated, where egg coeliomitis, egg shell fragments or other retained egg material are likely to be present
- Where lower GIT blockage, intussusceptions, non viable sections of GIT, etc., are anticipated
- Any situations where an enterotomy is required
- Salpingohysterectomy, orchidectomy in mature sexually active patients

The Gray Areas – Use Whatever Seems Right at the Time
- Lung and liver biopsy
- Cloacal examination and surgery
- Complex situations, with multi organ involvement
- Removal or treatment of abscessated material, including aspergilloma

FURTHER READING