SUMMARY

Back and neck pain is a common musculoskeletal disorder affecting about 80% of people at some point in their lives. It accounts for more sick leave and disability than any other medical condition.

Potential sources of back pain include the intervertebral disc disorders such as disc degeneration , disc herniation , and discitis. Research on the pathophysiology of back pain and radiculopathy is integral to developing new management strategies after confirming diagnosis by the suitable modalities (X-ray , CT , MRI , and laboratory studies) strategies of management include conservative methods ranging from self care , activity control , physiotherapy , and medications. The last choice of treatment is surgical intervention , in the few last decades the era of minimalism or less invasive surgeries invade the field of spine surgery including the disc surgery leading to open a new horizons of less morbidity and induce a pronounced socio-economic effect by decreasing the inpatient stay time , recovery time , and improvement of life quality.

Minimally invasive spine surgery has been influenced by advances in lasers, endoscopy , and image guidance systems. The technique used in management of disc disorder depend on the site and extent of the pathology , the following techniques are explained in detail in this essay:

*Cervical disc disorders treated by various minimally invasive techniques as posterior minimally approach using endoscope , reaching the desired level by image intensifier equipment then use of expendable dilator , via which the endoscope used to perform foraminotomy and discectomy.

Another technique used to reach the cervical disc is the anterior minimally invasive approach which like the conventional open approach but by using mini access technique to decrease the post operative morbidity.

*Thoracic disc disorders can be treated by :

-Anterior mini trans thoracic approach to reach level from T5-10 , the desired level localized by lateral fluoroscopy then a small skin incision made to reach to the disc and discectomy done.
-Another technique can be used depending on the use of thoracoscopy the level is localized then portals opening made to facilitate the reach to the disc for discectomy.

-Minimally invasive thoracic micro discectomy can be done using mini access technique assisted by endoscope and fluoroscopy to determine the level and manage the disc disorder.

*Lumbar disc treated by variable techniques such as:
-Transforaminal endoscopic discectomy , the portal of the endoscope is placed properly by the assistance of the fluoroscopy to reach through the foramin in the safe triangular zone(kambin's triangle)to make discectomy.

-Also fusion can be done by minimally invasive way by using of bulls-eye technique and assistance of fluoroscopy.
-Percutaneous nucleoplasty done by mini access to reach the disc and make nucleoplasty by electro- thermal coblation.
-Laser technology used to perform discectomy using YAG laser and professor Choy put its first rules of use.

Minimally invasive spinal procedures can be performed effectively in the cervical, thoracic, and lumbar spine to treat a variety of spinal disorders. However, these techniques can only be applied safely after a thorough understanding of spinal anatomy, appropriate clinical instruction, and an appreciation of potential complications. Patients should be advised of possible complications, especially dural tears, that may require additional treatment and that although these procedures are minimally invasive, they nonetheless carry similar risks to open procedures. Many of these procedures have steep learning curves and required additional training to master, including fellowship training, cadaveric workshops, and animal lab study. However, once mastered, these techniques can result in a significant reduction of complications and postoperative pain and discomfort and return patients to their activities of daily living sooner than standard open, more conventional procedures.