

## Point of Care Ultrasonography for Surgeons

Point of care ultrasonography means to use of portable ultrasonography at patient bedside for diagnostics, symptoms or sign based examination and therapeutics image- guided procedure for example percutaneous drainage of abscess and ultrasonic aspiration of intraperitoneal collection.

Few years ago I was called by my neighbor to give an opinion on his son, admitted at a private hospital who was diagnosed as suspected appendicitis. When I saw him, he had pain in the right iliac fossa, was slightly tender at the site and looked ill. I requested the management to make portable ultrasound machine available to me. The request was granted. On keeping the Ultrasound probe in the right iliac fossa, I could visualize a dilated distal third of ureter with an echogenic shadow distal to the dilatation. I had no difficulty in making a correct diagnosis of right ureteric colic pain, mimicking acute appendicitis.

I did not realize at that time that this will be labelled as “point of care ultrasonography”. Point of care ultrasonography refers to the use of portable ultrasonography at patient bedside for diagnostics (e.g. symptoms or sign based examination) and therapeutics (e.g. image- guided procedure).<sup>1,5</sup>

In 1989 I was Associate Professor of Surgery and Head of the Surgical Unit 5 in Dow Medical College and Civil Hospital Karachi. One of my student- a young recent graduate requested me that he be allowed to do ultrasound of the cases admitted in my unit. He had purchased an ultrasound machine and wanted to gain more experience using them on patients. I had no hesitation in giving him my nod.

A patient of mine was running hectic fever, undiagnosed till now. There were no significant abdominal findings. After the ultrasound examination, I was informed by him- sir, this patient has an abscess in the spleen. I was rather taken a back – the spleen having an abscess! There was no history of any splenic trauma, the spleen was not palpable. I did not believe him. Later when I operated on him, I did found an abscess in the spleen. This recent young graduate, with no significant surgical experience, was able to diagnose correctly a patient with splenic abscess, which had no place in my differential diagnosis.

I became interested in ultrasound equipment. I bought one portable machine. The purpose of buying the machine was to cater to the needs of my wife maternity clinic and to use it on my patient too. I requested the vendor to help me learn ultrasound technique. He directed me that I can attend the private clinic where he had supplied the equipment earlier on and observe. There was no trainee institute for surgeons to learn ultrasound in those early days. I just did that and spend 2 hours daily to watch how ultrasound equipment was being used. I did this for about 4 weeks. I also bought a book ‘Practical Ultrasound’ Edited by R.A.Leski, Medical Physics Department, Ninewells Hospital and Medical School, Dundee UK –first Published 1988, IRL Press, Oxford, Washington DC.(ISBN 1 85221 068 0).

I thought that the best person to interpret the ultrasound images is the surgeon himself. Surgeons knows anatomy in greater details and ultrasound images are related to the anatomical structures. Having taken a history, examine the patient, the surgeon has number of possible diagnosis in his mind. Performing Ultrasound in

the clinic, on bedside, soon after history taking and physical examination can make the diagnosis relatively easy. A jaundice patient can be diagnosed as having surgical versus medical jaundice, a breast lump can be diagnosed as cystic or solid, liver abscess can be picked up, scrotal swellings can be diagnosed more accurately and so on. Ultrasound empowered me to see the pathology in the viscus and make a firm diagnosis. Ultrasound machine are more user friendly, more economical and much more miniaturized now a days. The hand held equipment too, have become available. The learning curve for the surgeon is very short.<sup>2-4</sup> Surgeons are well versed with the anatomy and they can readily interpret the sonographic appearance of different viscus. Just as use of stethoscope is important for the cardiologist, so is the ultrasound probe for a surgeon.<sup>4,5</sup>

Characteristics of point of care ultrasound (Kendal et al)<sup>6</sup>:

- Exam is for a well defined purpose linked to improving patient outcome.
- Exam is focused and goal orientated
- Exam findings are easily recognizable
- Exam is easily learned
- Exam is quickly performed
- Exam is performed at the bed side.

There is no substitute for learning the traditional method of performing physical examination. Performing a meticulous physical examination is the very foundation of clinical medicine<sup>3</sup>. However surgeons who become skilled in the use of point of care ultrasonography become uniquely empowered.

FAST(Focused assessment with sonography in trauma scan).

The FAST ultrasound is a proven and useful procedure to detect free blood In abdomen, following trauma<sup>6,7</sup>. The ready portability of ultrasound equipment allows the FAST examination to be used at the patient's bedside or in the rapid triaging of multiple individuals in mass casualty

situations, including assessments in the field. Emergency medical services personnel have begun to use FAST in several locations worldwide for these purposes. With improving technology and imaging resolution, the role of the FAST examination in the acutely injured patient should expand. The use of ultrasound in a particular institution or setting must be based on access to equipment and appropriately trained personnel and should be subject to an organized quality assurance program.

Prof Zakiuddin G oonwala is our very respected teacher. We learnt a lot from him in our undergraduate and post-graduate training programmes. I have no hesitation in enlisting his name among few most senior surgeons of the country. He has keen interest in use of ultrasonography for diagnosis of surgical emergencies. I have requested him for a write-up on ultrasonography and his experience and expertise in use of ultrasonography for surgeons. I am pleased to include his write-up as an editorial for this issue. Prof Saleem Khan

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