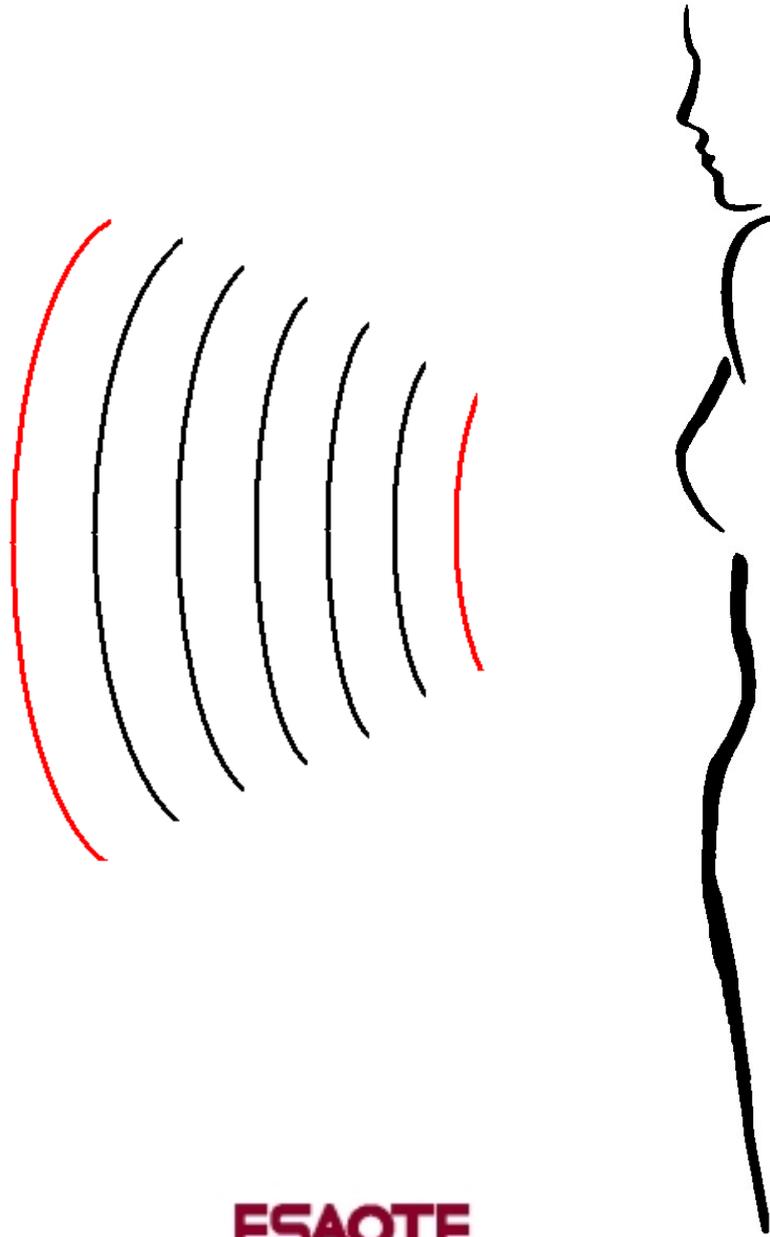


ULTRASOUND

CLINICAL APPLICATIONS



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Clinical Applications

Abdominal Application

The Abdominal Imaging is performed for the following clinical evaluations:

- (1) To detect abdominal organ abnormalities.
- (2) To determine the size, contour, and pattern of the abdominal venous structure.
- (3) To characterize an obstruction.
- (4) To determine blood flow patterns and velocities.

Target	Abdominal Organs Arteries Veins
Approach	Abdominal
Patient	Adult Neonatal Pediatric

Peripheral Vessel Application

The Peripheral Vessel Application is performed for the following clinical evaluations:

- (1) To determine the contour, size, and patterns of the peripheral vascular structure.
- (2) To characterize obstructions.
- (3) To determine blood flow patterns and velocities.

Target	Arteries Veins
Approach	Neck Extremities: Upper & Lower
Patient	Adult Pediatric

Clinical applications for peripheral vessels include vein mapping and sclerotherapy. Ultrasound is well recognized as a test modality for evaluating the veins of the upper and lower extremities. Compression B-Mode ultrasound techniques are used to assess the presence or absence of a thrombosis within the vessel lumen. Doppler spectral analysis and Color Flow Mapping techniques are used to assess the competency of venous valves, as well as the presence of an obstruction within the vessel.

A brief explanation of the vein mapping and sclerotherapy applications follows:

Vein Mapping - One common use of Duplex ultrasound (B-Mode, Doppler and Color Flow Mapping) is to "map" superficial veins that are to be used as "conduit" vessels in arterial bypass procedures. These bypass procedures include "Lower Extremity Arterial Bypass Grafts" and "Coronary Artery Bypass Grafts". The "Vein Mapping" technique includes B-Mode scanning of the vein to evaluate its anatomic location, vessel wall thickness, presence or absence of a thrombosis, and the vessel diameter. Doppler and Color Flow Mapping are used to assess venous patency, as well as valve competency. B-Mode ultrasound is then used to guide the marking of the vein's location throughout the course of the vessel on the patient's skin. The markings are usually left on the patient's skin until the time of surgery, so that the surgeon can visualize the location of the vein.

Sclerotherapy - Physicians who treat varicose veins using sclerotherapy commonly use Duplex ultrasound (B-Mode, Doppler and Color Flow Mapping) techniques to evaluate the patient's venous system prior to sclerotherapy treatment. When performing sclerotherapy treatment, physicians use the B-Mode ultrasound to guide the placement of the needle in the vein, as well as to visualize the introduction of the sclerosing agent into the vein. Duplex ultrasound is used to evaluate the condition of the treated vein(s) immediately after treatment, and on follow-up visits.

Small Organs (Parts) Application

The Small Organs Application is performed to visualize, evaluate and detect the following:

Target	Thyroid Gland Testicles Breast
Approach	Neck Scrotal Sac Breast
Patient	Adult Neonatal Pediatric

Neonatal Cephalic Application

The Neonatal Cephalic Application is performed to visualize, evaluate and measure brain structures that can be used to detect abnormalities such as abnormal vertical size, the shift in the midline, or flow abnormalities.

Target	Brain Structure
Approach	Intact Fontanel
Patient	Neonatal

Warning! This does not include transorbital or any other ophthalmic application.

Adult Cephalic Application

The Adult Cephalic Application is performed to visualize flow for detecting functional abnormalities (transcranial doppler) or to visualize arteries that supply blood to the brain.

Target Brain Structure
 Carotid

Approach Transcranial
 Neck

Patient Adult

Warning! This does not include transorbital or any other ophthalmic application.

Urologic Application

The Urologic Application is performed to evaluate the following:

- (1) Prostate Gland abnormalities.
- (2) Testicle abnormalities.
- (3) Penis Artery Blood Flow.

Target Prostate
 Testicles
 Penis

Approach Transrectal
 Scrotal Sac
 Penis

Patient Adult
 Pediatric

Fetal Application

The Fetal Application is performed for the following clinical evaluations:

- (1) To detect structural abnormalities.
- (2) To visualize and measure the anatomic and physiologic parameters of the fetus.

Target	Fetus
Approach	Maternal Abdomen Transvaginal
Patient	Adult

Endocavitary Application

The Endocavitary Application is performed for the following clinical evaluations:

- (1) Prostate Gland abnormalities.
- (2) Obstetric and Gynecologic abnormalities.

Target	Prostate Vagina
Approach	Transrectal Transvaginal
Patient	Adult

Laparoscopic Application

The Laparoscopic Application is performed in order to evaluate the following feature:

- (1) Cholecyst anomalies.
- (2) Liver anomalies.
- (3) Spleen anomalies.
- (4) Female reproductive apparatus.
- (5) Lung anomalies.

Target Cholecyst
 Upper/Lower Abdominal
 Uterus

Approach Laparoscopic

Patient Adult

Intraoperative Application

The Intraoperative Application is performed in order to evaluate the organs during the following:

- (1) Liver exploring.
- (2) Spleen exploring.
- (3) Thyroid exploring.

Target Liver
Upper Abdominal
Thyroid

Approach Intraoperative

Patient Adult
Pediatric



The Doppler mode has not been designed for fetal exploring

The following declarations have been extrapolated from the following scientific text:

Diagnostic Ultrasound Imaging in Pregnancy - National Institutes of Health Conference Consensus Statement - Volume 5, Number 1

“... ultrasound exploring on pregnant women must only be performed following specific medical instructions. Data on clinical effectiveness and safety do not allow, at present, the recommendation of such a screening type as a routine procedure...”

“...ultrasound exploring to meet a family desire to know the fetus’ sex, observe it, or have a fetal image should be discouraged. Furthermore the visualization of a fetus exclusively for demonstration and without medical benefit should NOT be performed.”

The user should always follow the ALARA (As Low As Reasonably Achievable) principle, but especially in this application. Use the lowest amount of acoustic output power for the shortest time to obtain the necessary clinical diagnostic information.

Cardiological Application

The Cardiological Application is performed for the following clinical evaluations:

- (1) To search and determine eventual anomalies in the heart.
- (2) To determine the contour, size, and patterns of cardiac structures.
- (3) To determine blood flow patterns and velocities.

Target	Heart Aorta
Approach	Thorax
Patient	Adult Pediatric

Musculo-Skeletal Application

The Musculo-Skeletal Application is performed for clinical evaluations on muscular tissues, tendons and nerves.

Target	Tendons Nerves
Approach	Muscular
Patient	Adult Neonatal Pediatric

Breast Application

The Breast Application is performed for clinical evaluations on mamma tissues.

Target	Breast
Approach	Thorax
Patient	Adult