

A Flow Measurement Guide
for Industry Bioengineers

ENDOMETRIAL ABLATION



www.transonic.com

ENDOMETRIAL ABLATION

Transonic Applications

Transonic began partnering with outside companies shortly after its inception in 1983 to develop innovative devices. Soon, a robust Transonic/Customer synergy developed between Transonic and device manufacturers and this vital Customer/Manufacturer relationship has become part of Transonic's DNA. It lies at the heart of the development of all Transonic products.

Our applications range from utilizing standard products straight off the shelf to creating such novel designs that they would not be recognized as a Transonic product. Together with our collaborators, Transonic has striven to push the limit on flow measurements including ultra-low flow applications in novel measurement mediums. Transonic customized Flowsensors and Flowboards are being used in a wide range of products and applications including:

Mechanical Circulatory Support Devices including:

1. Heart Lung Machines
2. Extracorporeal Membrane Oxygenation (ECMO) circuits
3. Artificial Hearts (AH)
4. Ventricular Assist Devices (VADs)

Renal Replacement Devices: Hemodialysis Machines

Organ Preservation Devices

Treatment Delivery /Therapy Devices

1. Anesthesia Delivery / Pain Management Systems including:
2. Organ Infusion Pumps
3. Urodynamic System / Urometer
4. Pediatric Hydrocephalus
5. Endometrial Ablation
6. Ocular Surgery

Many More Possibilities

A sampling of the broad spectrum of Transonic application will be presented along with the solutions that Transonic offers for each application.

ENDOMETRIAL ABLATION

Monitor and Control Flow Rates and Volume

Abnormal uterine bleeding (AUB) is a common and debilitating condition in women. It frequently co-exists with fibroids, but the relationship between the two is not completely understood. In many women, fibroids may be incidental to a menstrual bleeding complaint.

Some women whose heavy bleeding between periods is debilitating may choose to have endometrial ablation, a procedure to remove a thin layer of tissue (endometrium) that lines the uterus. This type of surgery has been performed over the past 15 years to stop or reduce heavy menstrual bleeding in those women who do not plan to have any children in the future.

Endometrial ablation currently uses microwave energy, radiofrequency energy, or direct heat or cold to rid the uterus of its endometrial lining.. Modalities include:

- **Electricity:** electric current is put on the uterus lining to destroy the endometrium;
- **Hydrothermal:** Heated liquid (saline) is pumped into the uterus to destroy its lining.
- **Balloon:** A balloon filled with liquid and heated is inserted into the uterus to destroy the lining.
- **Radiofrequency:** An electrical mesh is inserted into the uterus where it is expanded. An electrical current made by radio waves is then used to destroy the lining.
- **Cryoablation:** Cold temperature freezes the lining. A special probe guided by ultrasound on the abdomen, is inserted into the uterus. where the endometrium will be frozen.
- **Microwave:** Microwave energy is used to destroy to destroy the endometrial lining.

Suction is used to help remove liquids, steam, and other gases that are the byproducts of ablation.

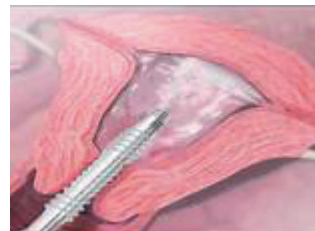
The downside of several of the methods is that they have typically been performed in the operating room where the patients are put under general anesthesia. Consequently, the procedure itself becomes more involved and a patient's recovery may be prolonged. Newer methods are now designed to be performed in doctors' offices which is more comfortable for patients, and more convenient for physicians.

While endometrial ablation lessens or stops menstrual bleeding, complications can occur. They include:

- Infection;
- Tearing of the uterine wall or bowel;
- Overloading of liquid into the bloodstream.

Transonic Solution: Volume Flow Measurement

Precisely controls flow rate and volume of heated saline solution during hydrothermal endometrical ablation.



Endometrical ablation