

Miniature Multisensor Catheter

TECHNICAL FIELD

Medical Device: Catheter (1996-0201, 2001-1119)

BACKGROUND

Pressure monitoring is used to assess physiologic functions of the cardiovascular system as well as the gastrointestinal and urinary tracts. Monitoring is either performed by using external pressure transducers connected by multi-lumen catheters which are connected to the patient, or by intra-catheter transducers. These large catheter-tipped transducers and large caliber catheters are relatively inflexible due to design constraints imposed by the wiring systems of the sensors, making their use cumbersome.

None of the currently available systems allow convenient or inexpensive approaches for measuring sequential pressures by a single small caliber catheter device.



APPLICATIONS

Multisensor and sensor/delivery/sampling catheter for diagnosis, treatment and monitoring of adult and pediatric patients

ADVANTAGES

- **Enhanced ability to diagnose, treat and monitor pediatric and adult diseases**
- **Adaptable platform**

INVESTIGATORS

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STATUS

Issued Patent 6,264,612.
Patent applications pending.

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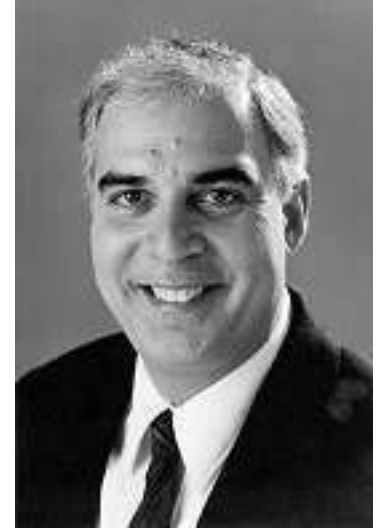
TECHNOLOGY

Several laboratories within the Cincinnati Children's Research Foundation have collaborated to improve and miniaturize this technology both mechanically and physically. A device has been designed that incorporates microsensors into a 2mm diameter catheter, thus eliminates the cumbersome equipment of external manometry. Sensor position within the catheter may be easily customized to allow specialized catheters for application in all regions of the urinary and gastrointestinal tracts as well as the cardiovascular system.

The novel design and miniature size of the catheter provide an adaptable platform that allows (1) the inclusion of other biosensors in the array, such as pH, osmolarity and temperature sensors, (2) use in adults and neonatal and pediatric patients, (3) monitoring of various regions of the body, (4) use of a double lumen system that allows for using one catheter for sensing a physiologic parameter and the other for sampling fluids or delivering locally active drugs.

THE INVENTOR

Richard G Azizkhan, MD
Surgeon-in-Chief
Lester W. Martin Chair of Pediatric Surgery
Professor of Surgery and Pediatrics, University of Cincinnati College of Medicine



BACKGROUND

The first occupant of the Lester W. Martin Chair in pediatric surgery, Richard G. Azizkhan, MD, came to Cincinnati Children's Hospital Medical Center from Children's Hospital of Buffalo, Buffalo, NY, where he had been surgeon-in-chief and director of the pediatric surgery training program.

Board of Pediatrics recertification, 2000.

Dr. Azizkhan serves on the Executive Committee of the American Academy of Pediatrics, Surgical Section, and is Program Chairman for Pediatric Surgery American College of Surgeons.

In addition to his clinical work, Azizkhan is deeply involved in research and has published prolifically in medical literature. He is currently working on a book titled, *Operative Pediatric Surgery*, with former surgeon-in-chief, Moritz Ziegler, MD. Azizkhan is the project coordinator for Cincinnati Children's International Medical Education Exchange Program with Bosnia (Tuzla) and Croatia (Zagreb Children's Hospital).

As a surgical educator, he is director of the Pediatric Surgery Training Program and responsible for all surgical educational programs at Cincinnati Children's.