

## A new double hole pencil point atraumatic needle for amniocentesis

Joseph Eldor

Department of Anesthesia, Misgav Ladach General Hospital, Jerusalem, Israel

In 1997 there were 3,880,894 births in the United States. Only 118,298 parturients underwent Amniocentesis (3 percent). As a result of this diminished use of Amniocentesis there were over 1,600 babies born with Down's Syndrome and over 900 babies born with Spina Bifida/Meningocele (National Vital Statistics Reports, Vol. 47, No. 18).

Is there a need for a Second Thought regarding this trend of Amniocentesis? Is the fear from the current Amniocentesis needle is so big that the parturients are ready to risk the birth of a defected baby?

This letter intends to address the issue of the current Quincke spinal needle used now versus the new Atraumatic Amniocentesis needle.

The Atraumatic Amniocentesis needle is manufactured by TSK Laboratory, Japan (Tochigi-Shi, Tochigi-Keri, 328 Japan). It is a 22 gauge, 90 mm needle. It has a pencil point tip with two circular holes at the tip. It is composed of a stainless steel AISI 304 with a polycarbonate hub. OD –  $0.70 \pm 0.01$  mm. ID –  $0.40 \pm 0.01$  mm. Obturator length –  $109.5 \pm 2$  mm. OD of the obturator –  $0.35 \pm 0.01$  mm. Location of the Double holes – within 5 mm from the needle tip. Size of the hole: 0.25 mm.

### The instructions for use of this Atraumatic Amniocentesis Needle are:

1. Examine the uterus and the fetus under ultrasound for the best place for amniocentesis needle insertion.
2. Clean the skin puncture site with an antiseptic solution until it is sterile.

3. Infiltrate the skin puncture site with a small dose of an anesthetic solution using a very small gauge hypodermic needle (27G).
4. Insert an introducer through the site of the skin anesthetic infiltration.
5. Insert the Atraumatic Amniocentesis Needle through the introducer into the uterus under ultrasound supervision.
6. Remove the obturator from the amniocentesis needle.
7. Attach a syringe to the amniocentesis needle.
8. Aspirate amniotic fluid.
9. Withdraw the Atraumatic Amniocentesis Needle with its introducer.
10. Clean the skin puncture site with an antiseptic solution.
11. Examine the uterus and the fetus under ultrasound.
12. Repeat ultrasound examination of the uterus and the fetus 24 hours after the Amniocentesis.

Prior to the introduction of simultaneous ultrasound examination and sonographic guidance of the needle, amniocentesis was associated with infrequent but serious fetal complications, including pneumothorax, laceration of the spleen, hematoma of the thorax, and head and eye injury [1,2].

The typical amniocentesis needle is a 8.9 cm, 22-gauge Quincke spinal needle. The incidence of inadvertent needle contact with the fetus using the current technique is 0.4% (7 of 1,458) [3].

Significant blood contamination of the amniotic fluid after amniocentesis occurs in every instance if evaluated at a 'second look' procedure; the blood contamination is higher when an anterior placenta is traversed with the needle [4].

**Correspondence address:** Joseph Eldor MD, Department of Anesthesia, Misgav Ladach General Hospital, Jerusalem, Israel, e-mail: a1b2c3d4@netvision.net.il, <http://www.csen.com/anesthesia>

Failure to aspirate amniotic fluid during amniocentesis can be due to several causes: The needle tip may be against the fetus, umbilical cord, or placenta; secondary to debris in the needle lumen; tenting of the membranes [5,6].

A fetus can move onto a needle and also a posterior placenta can thrust against a needle by a contraction during aspiration, either leading to injury or bleeding when the needle tip is sharp.

A new needle that may overcome these disadvantages of the current used needle is suggested herein.

It is named Eldor Amniocentesis Needle (Double-hole pencil-point needle), and is composed of a blunt ogival tip and two circular holes opposing each other just proximal to the tip (Figure 1).

The same rules that are now the state of the art in spinal anesthesia can be applied to Amniocentesis as well. This Atraumatic needle tip for amniocentesis can facilitate the aspiration of the amniotic fluid through its bilateral holes, avoid amniotic tenting, reduce amniotic bleeding and maternal pain upon its insertion.

It may also avoid coring of maternal tissue that may be introduced into the uterus.

Unlike the current Quincke needle this new amniocentesis needle has atraumatic characteristics. It intends to separate the fibers of the uterus and thus avoiding unnecessary intrauterine bleeding which occurs in almost every case when the Quincke spinal needle is used for Amniocentesis.

---

#### REFERENCES:

---

1. Creasman WT, Lawrence RA, Thiede HA: Fetal complications of amniocentesis. *JAMA*, 1968; 10: 204-211
2. Hyman CJ, Depp R, Pakrovan P et al: Pneumothorax complicating amniocentesis. *J Obstet Gynecol*, 1973; 41: 43-46
3. Petrikovsky B, Kaplan GP: Fetal responses to inadvertent contact with the needle during amniocentesis. *Fetal Diagn Ther*, 1995; 10: 83-85
4. Giorlandino C, Gambuzza G, D'Alessio P et al: Blood contamination of amniotic fluid after amniocentesis in relation to placental location. *Prenatal Diagnosis*, 1996; 16: 180-182
5. Bowerman RA, Barclay ML: A new technique to overcome failed second-trimester amniocentesis due to membrane tenting. *Obstet Gynecol*, 1987; 70: 806-808
6. Shulman LP, Simpson JL, Elias S: Invasive prenatal genetic techniques. In: Sciarra J (ed.): *Gynecology and Obstetrics*. Lippincott, Philadelphia 1992.

# Index Copernicus

## Global Scientific Information Systems for Scientists by Scientists

[www.IndexCopernicus.com](http://www.IndexCopernicus.com)



TM

# INDEX COPERNICUS INTERNATIONAL



**EVALUATION & BENCHMARKING**

**PROFILED INFORMATION**

**NETWORKING & COOPERATION**

**VIRTUAL RESEARCH GROUPS**

**GRANTS**

**PATENTS**

**CLINICAL TRIALS**

**JOBS**

**STRATEGIC & FINANCIAL DECISIONS**

## Index Copernicus integrates

### IC Scientists

Effective search tool for collaborators worldwide. Provides easy global networking for scientists. C.V.'s and dossiers on selected scientists available. Increase your professional visibility.

### IC Virtual Research Groups [VRG]

Web-based complete research environment which enables researchers to work on one project from distant locations. VRG provides:

- customizable and individually self-tailored electronic research protocols and data capture tools,
- statistical analysis and report creation tools,
- profiled information on literature, publications, grants and patents related to the research project,
- administration tools.

### IC Journal Master List

Scientific literature database, including abstracts, full text, and journal ranking. Instructions for authors available from selected journals.

### IC Patents

Provides information on patent registration process, patent offices and other legal issues. Provides links to companies that may want to license or purchase a patent.

### IC Conferences

Effective search tool for worldwide medical conferences and local meetings.

### IC Grant Awareness

Need grant assistance? Step-by-step information on how to apply for a grant. Provides a list of grant institutions and their requirements.

### IC Lab & Clinical Trial Register

Provides list of on-going laboratory or clinical trials, including research summaries and calls for co-investigators.