NCI Thyroid FNA Conference
Section 3: Techniques

- **Q1: <u>Aspiration devices, needles, methods</u>?**
- Q2: Role of anesthesia?

NEEDLES & FOLLICLES

Follicular Nucleus = RBC / SL = 8 - 10µ
Follicle = 200µ ±

Needle	Nominal OD		Nominal ID	
Gauge	mm	inches	mm	inches
10	3.4040	0.1340	2.6920	0.1060
12	2.7690	0.1090	2.1590	0.0850
14	2.1080	0.0830	1.6000	0.0630
16	1.6510	0.0650	1.1940	0.0470
18	1.2700	0.0500	0.8380	0.0330
20	0.9020	0.0355	0.5840	0.0230
22	0.7110	0.0280	0.3940	0.0155
23	0.6350	0.0250	0.3180	0.0125
25	0.5080	0.2000	0.2410	0.0095
28	0.3560	0.0140	0.1650	0.0065
30	0.3050	0.0120	0.1400	0.0055
32	0.2290	0.0090	0.0890	0.0035

Gauge vs. Cellular Target

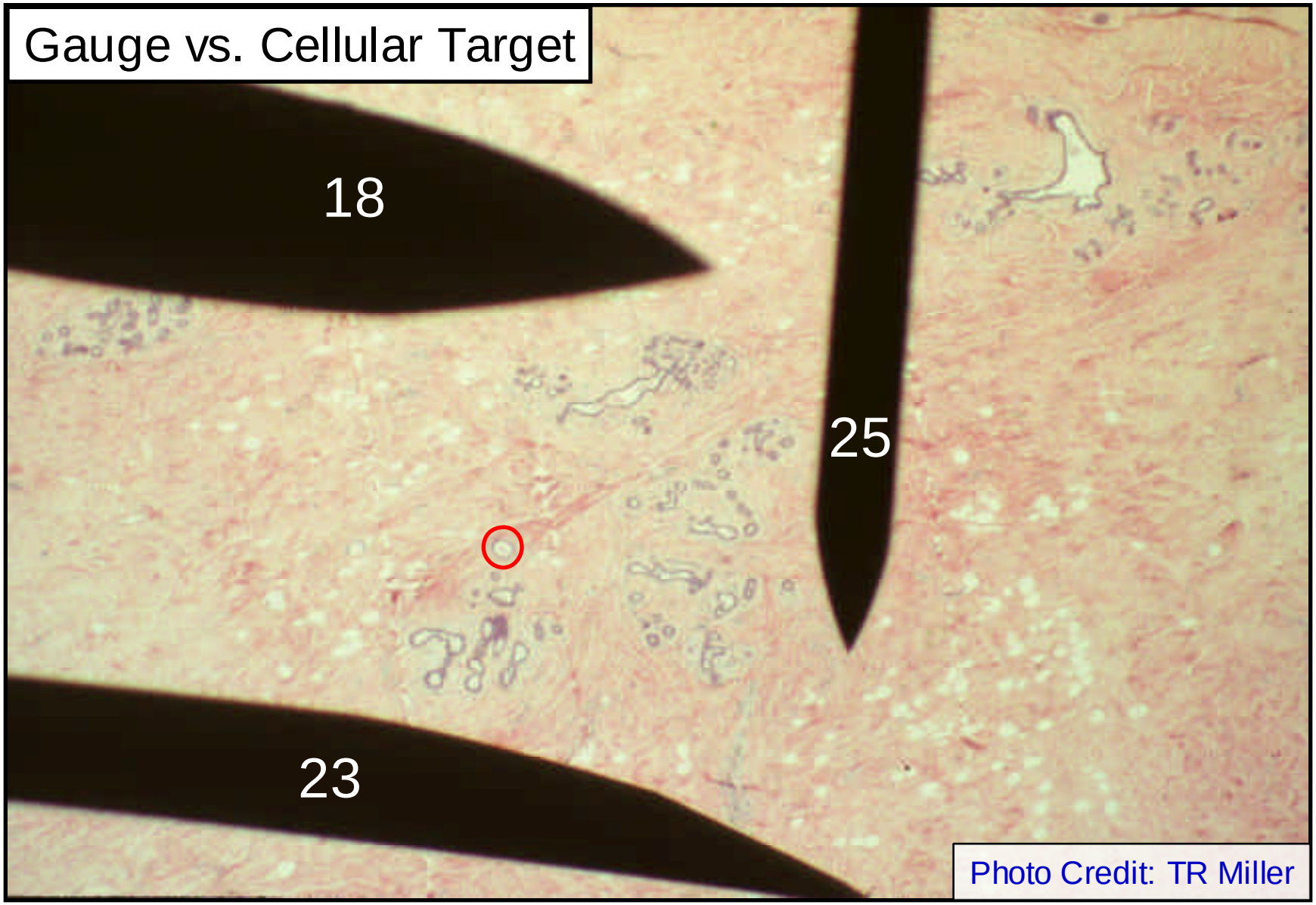


Photo Credit: TR Miller

Nonaspiration Cytology.
Acta Cytologica 32:353, 1988.

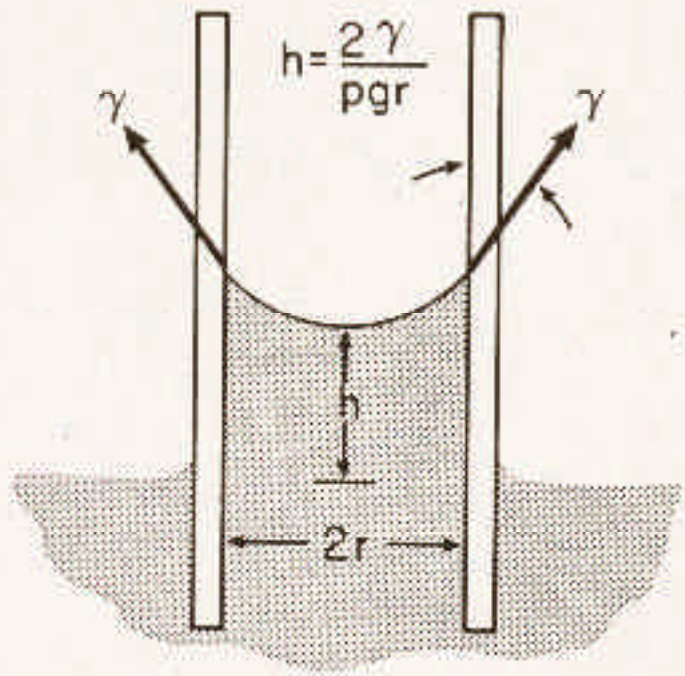
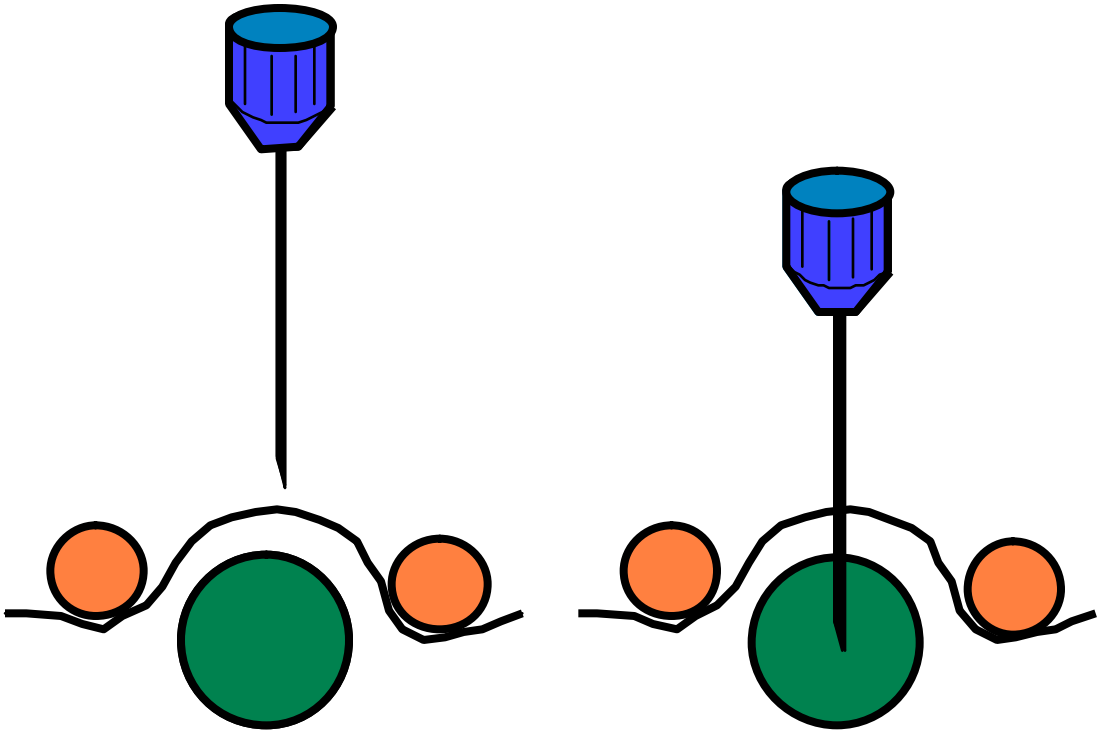


Figure 1
The principle of capillary tension. The ascent of fluid into a narrow channel is governed by the formula $h = 2\gamma/\rho g r$, where h is the height attained, γ is the fluid surface tension, ρ is the density of that fluid, g is the gravity and r is the radius of the tube.

NCI Thyroid FNA Forums – Aspiration 7

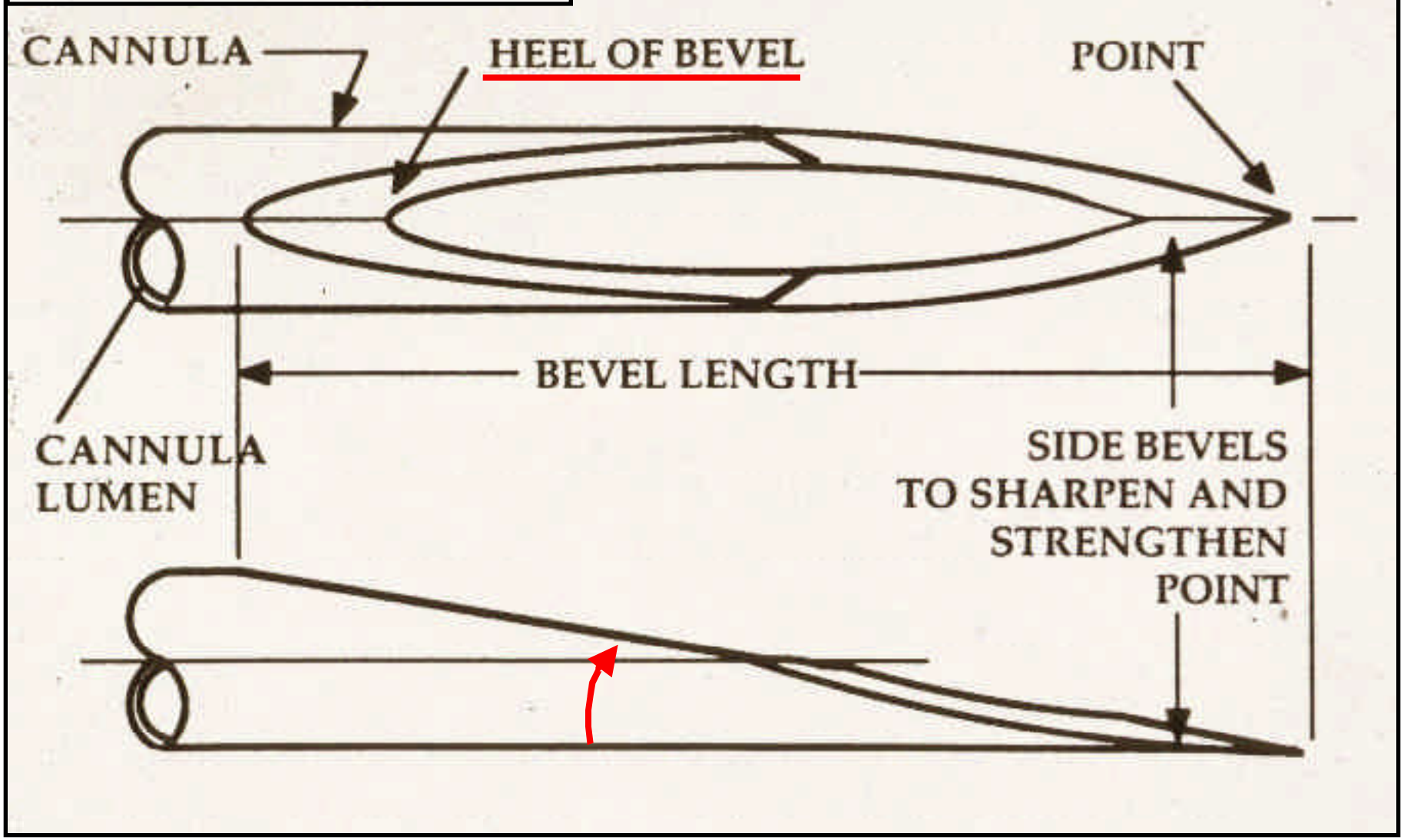
3 Zajdela

4 Aspiration

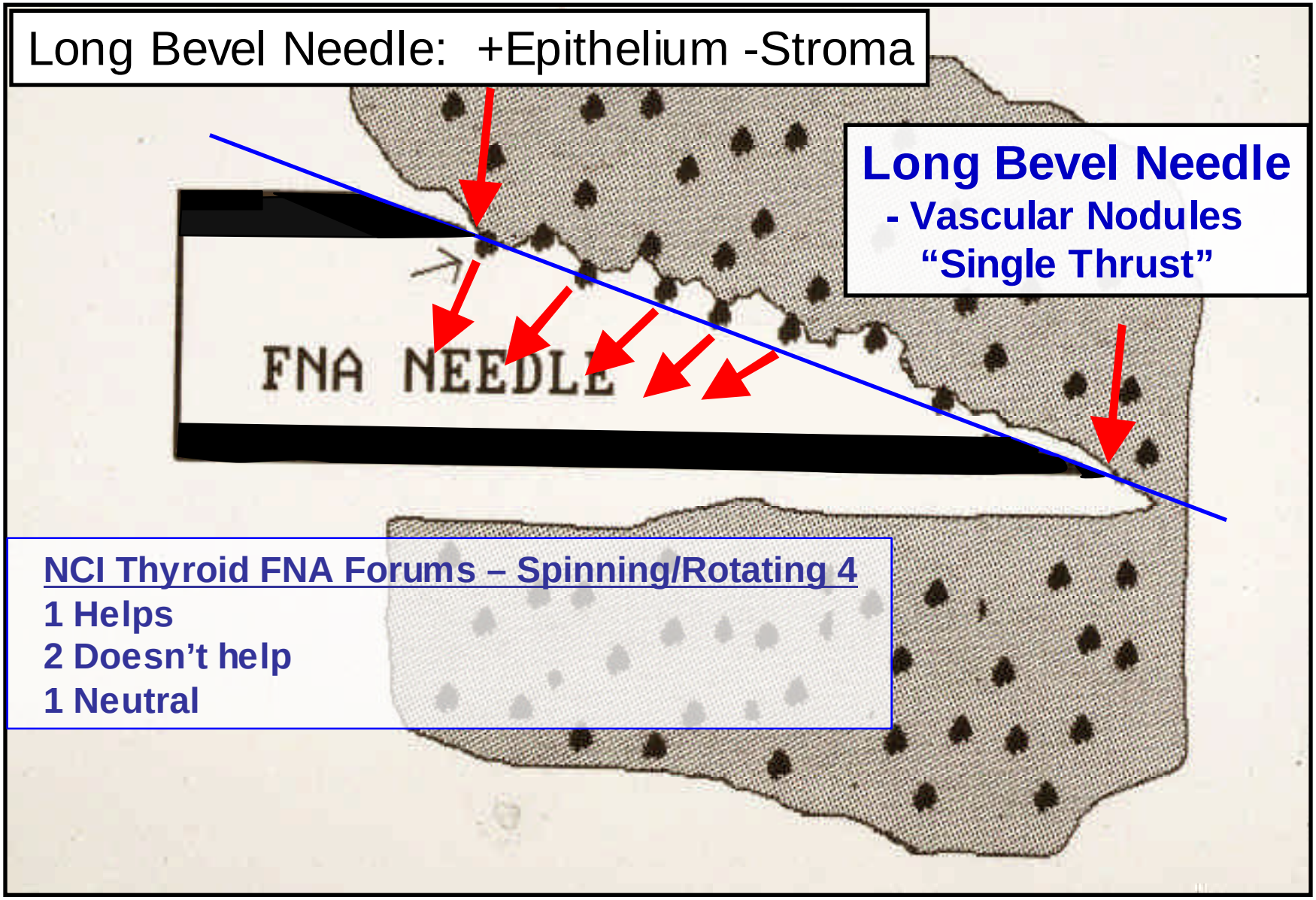


ZAJDELA, A. *DIAGN CYTOPATH* 2:17-20, 1986

Long Bevel Needle -- IM



Long Bevel Needle: +Epithelium -Stroma



Long Bevel Needle
- Vascular Nodules
"Single Thrust"

NCI Thyroid FNA Forums – Spinning/Rotating 4
1 Helps
2 Doesn't help
1 Neutral

TOO MANY: 36 Slides & No Joy

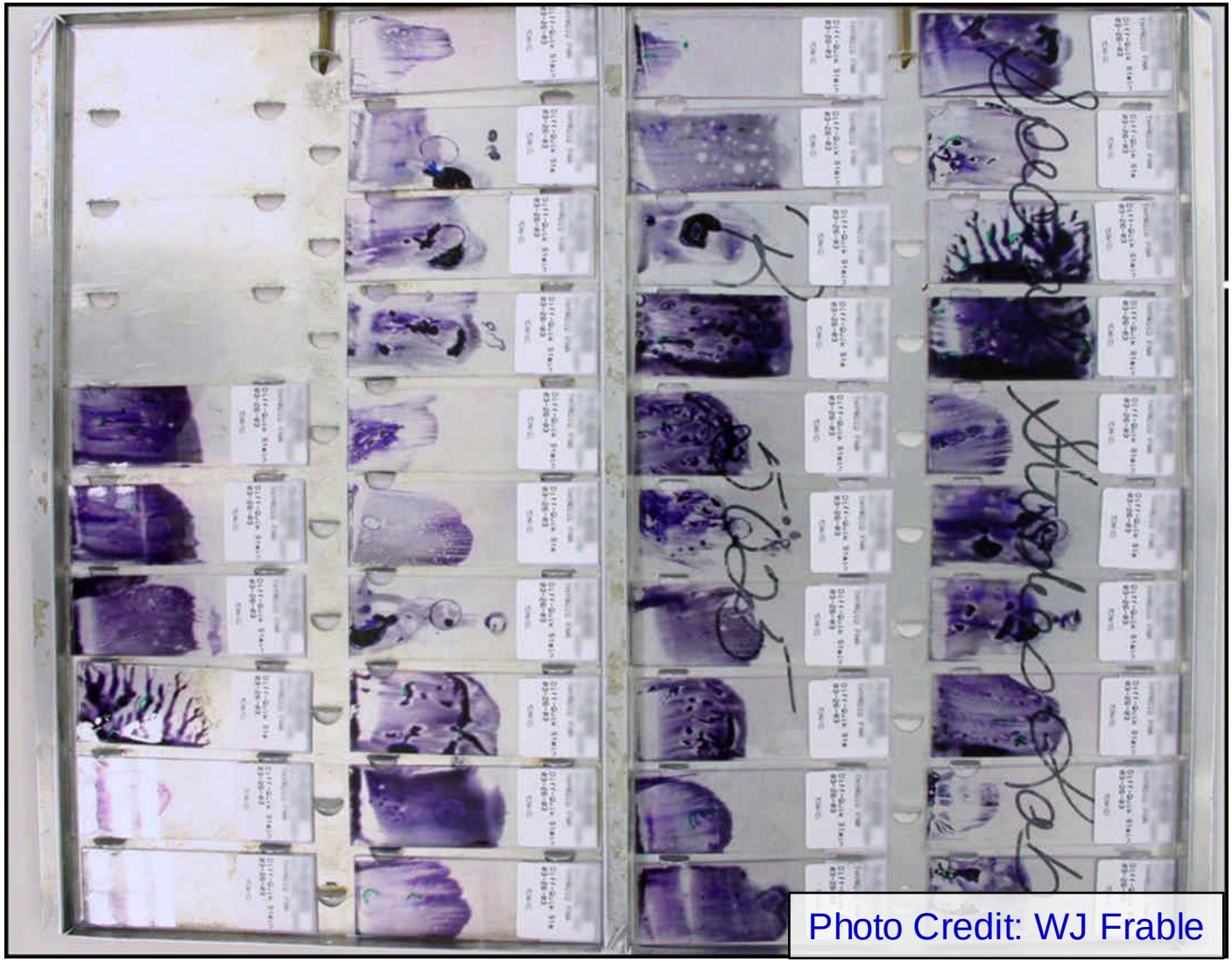
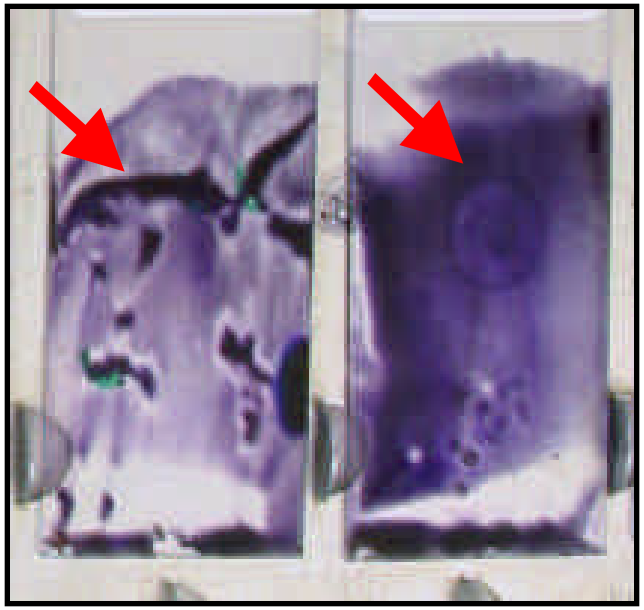


Photo Credit: WJ Frable

36 SLIDES = TOO MUCH CLOT / BLOOD



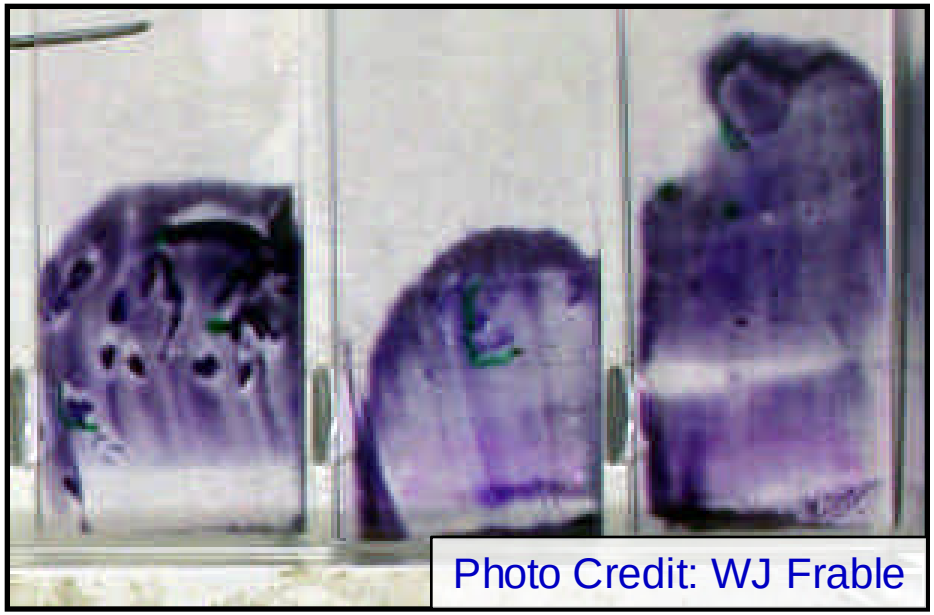


Photo Credit: WJ Frable

OPA SLIDE GUIDELINES:

1 BX = 1 SLIDE (2 SLIDES BEGINNING; 1.5 SLIDES)

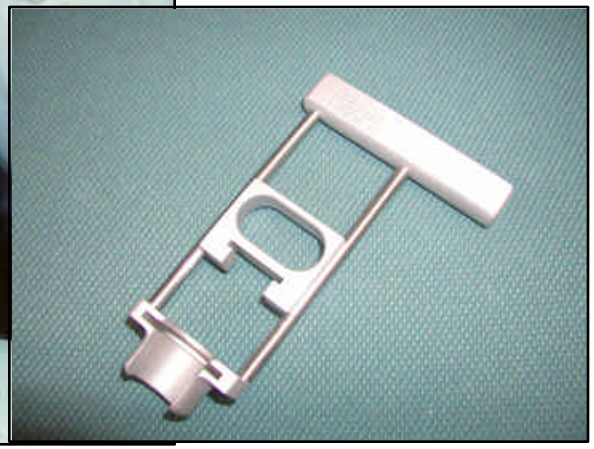
(> 2 = ? Suboptimal Bx Technique)

BX Cadence = 3 Seconds @ 3 / Second bml jsa

A. Devises, Needles, & Methods: Conclusions

- Needles: Long bevel (IM) 27-25G
  - Zajdela Technique usually Sufficient
  - Rotation Optional
  - Vascular – Single thrust
  - Bx Cadence: 3/Sec for 3-5 seconds
  - 1 Bx → 1-2 slides
- Suction and Cysts

SUCTION DEVISES



Cameco

Belpro Medical
9915 Place York
Anjou , Quebec

SUCTION DEVISES

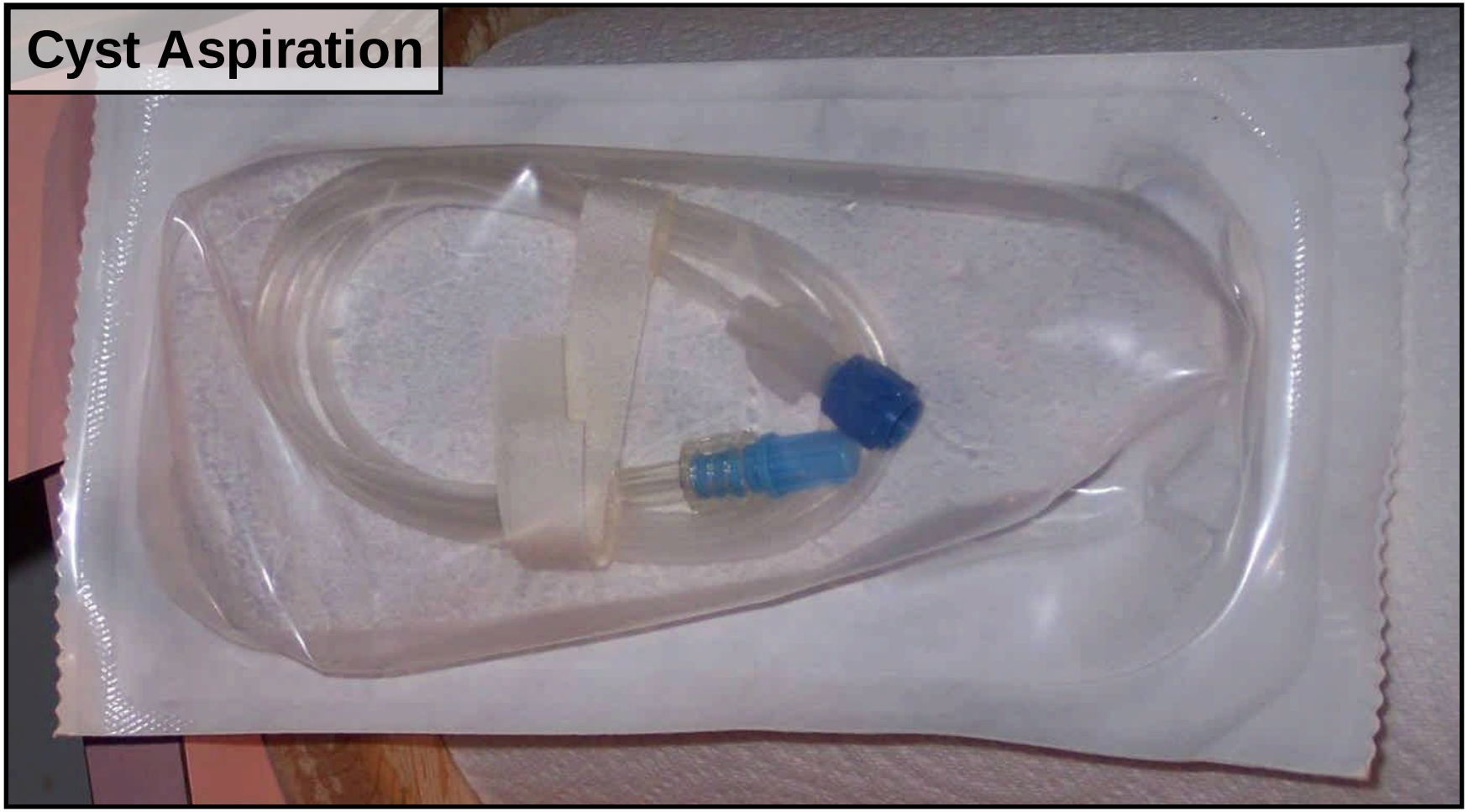
www.taoaspirator.com/

+ Better feel
- Needle alone
- Residual vacuum

www.inrad-inc.com

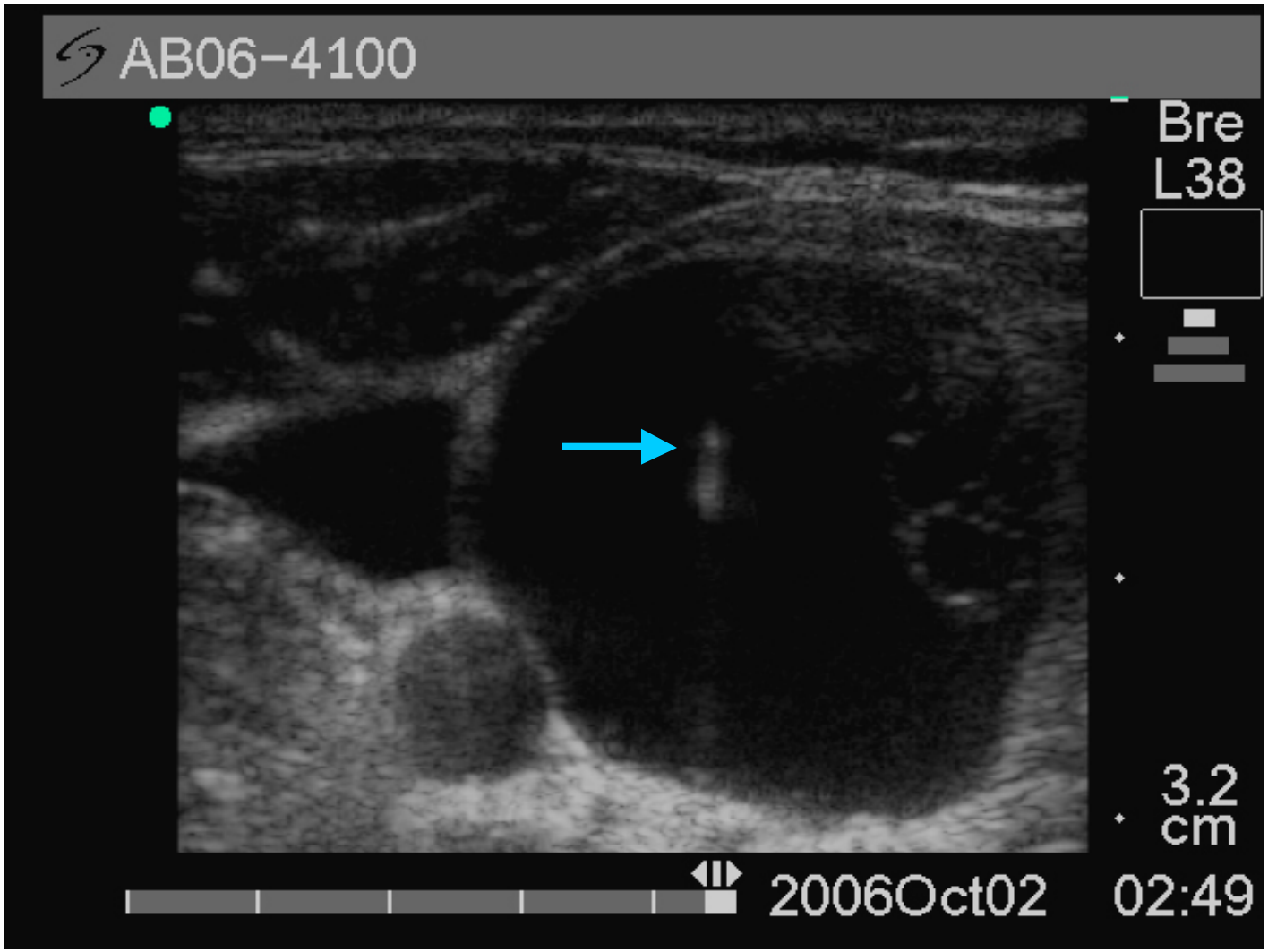
Vinod Shidham, MD
Editor, CytoJournal
Medical College of Wisconsin

Cyst Aspiration

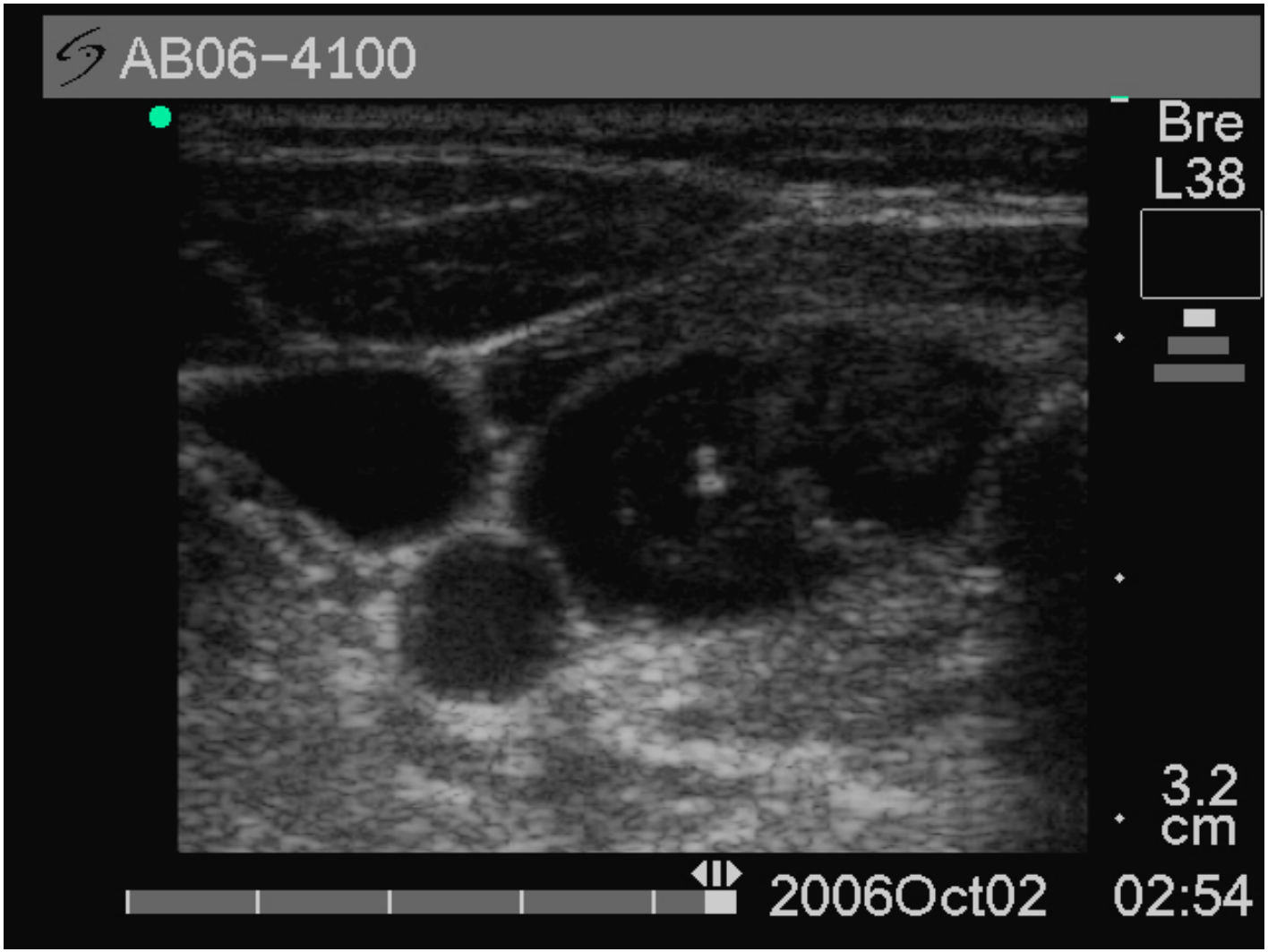


Baxter I.V. Extension 34” Male Luer
4cc Catalogue 2C6227

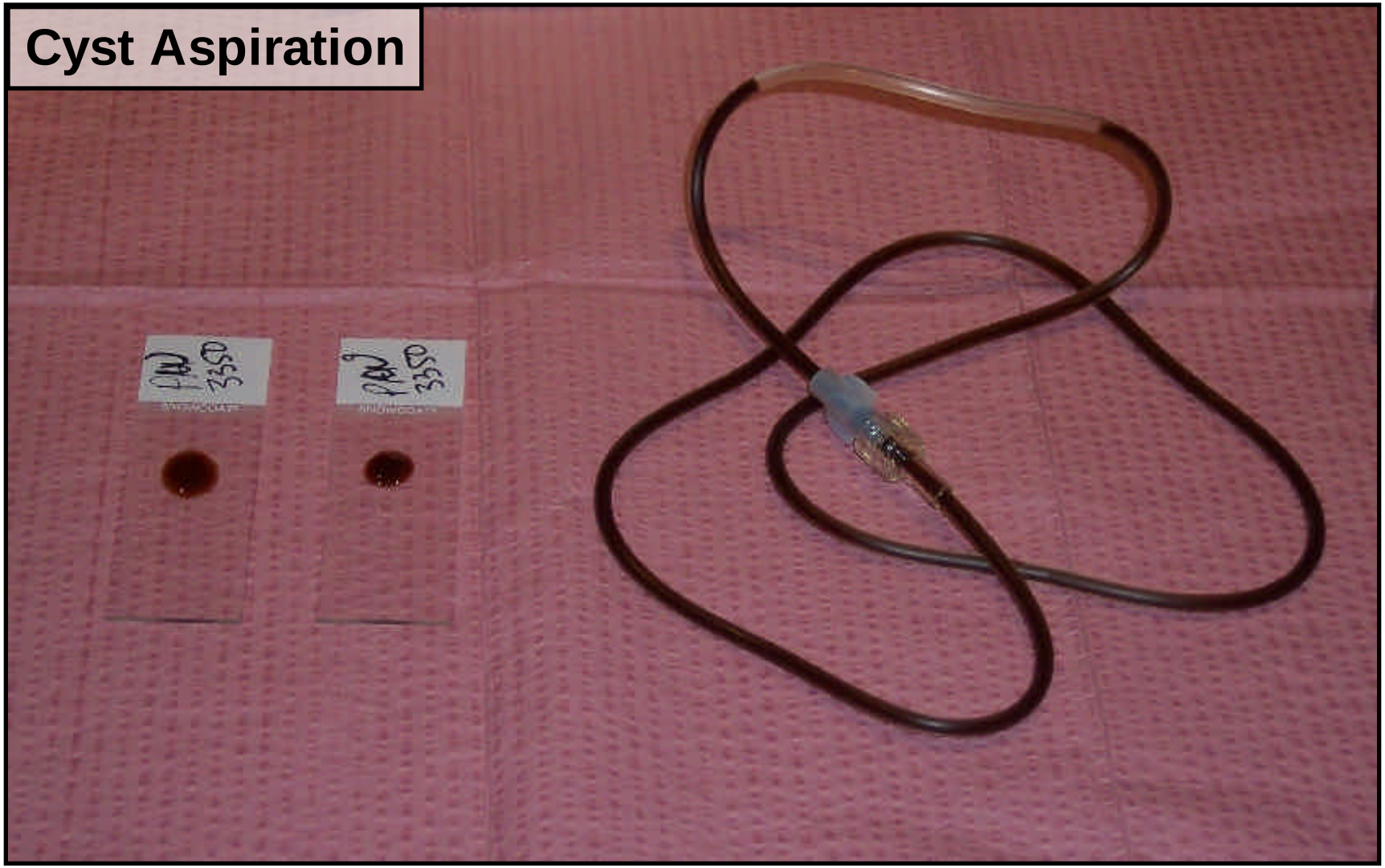
Cyst Drainage



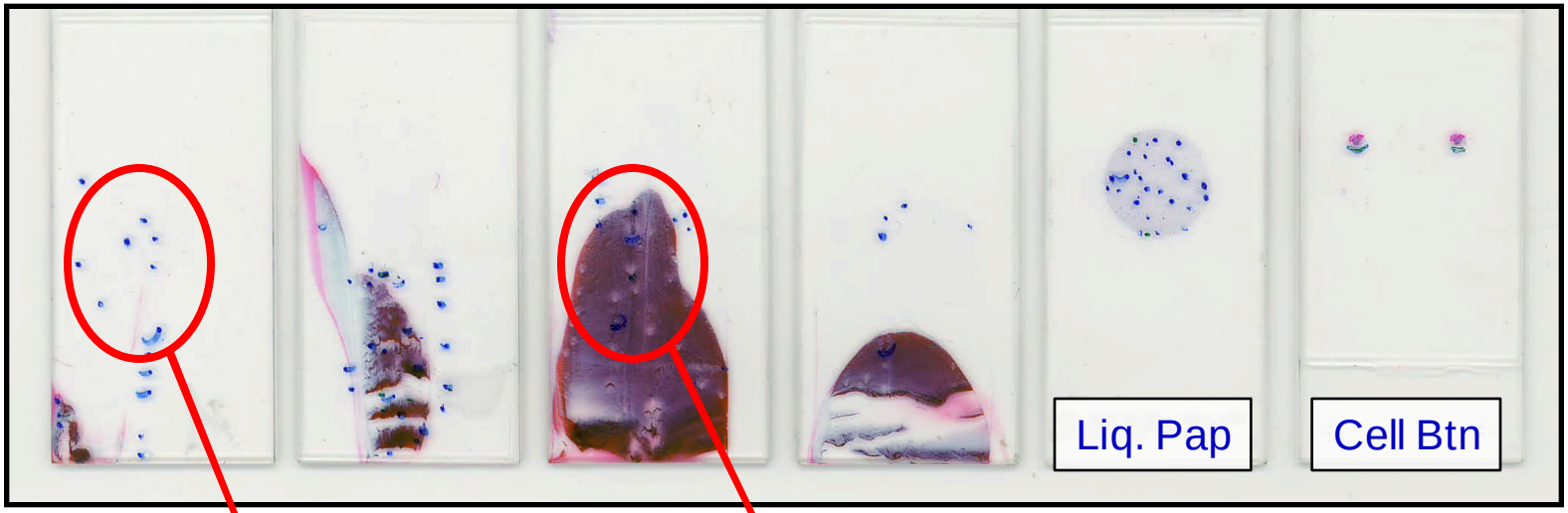
Cyst Drainage

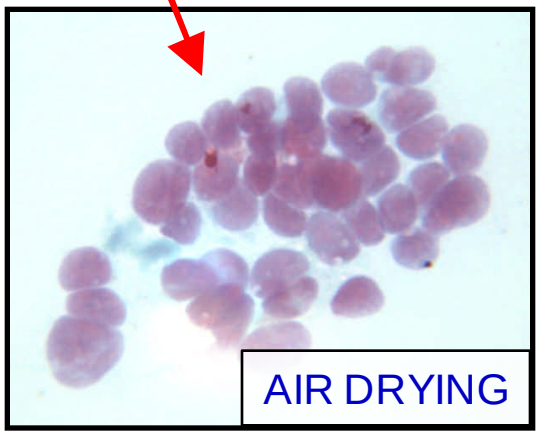


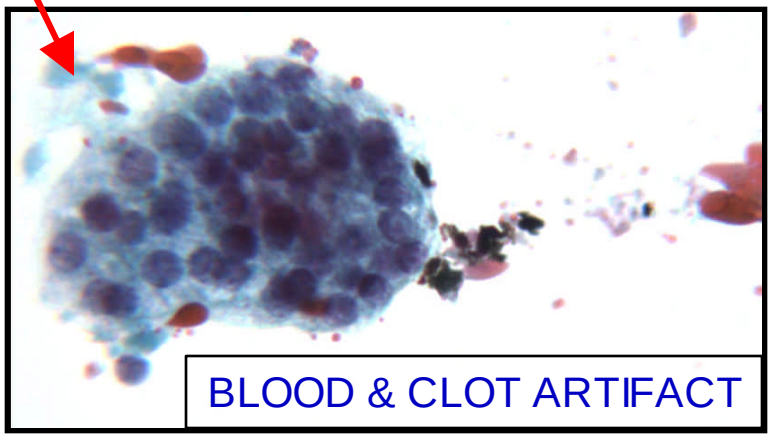
Cyst Aspiration



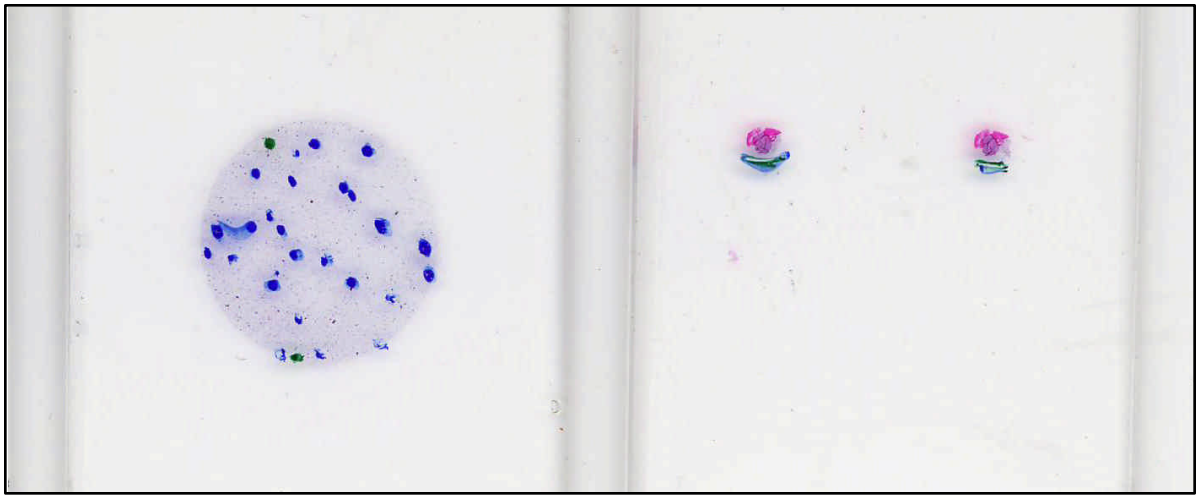
Technical Smearing Poverty
TOO BLOODY + HORRIBLE SMEARS







TECHNICAL SMEARING POVERTY



LIQUID PAPS CELL BUTTONS

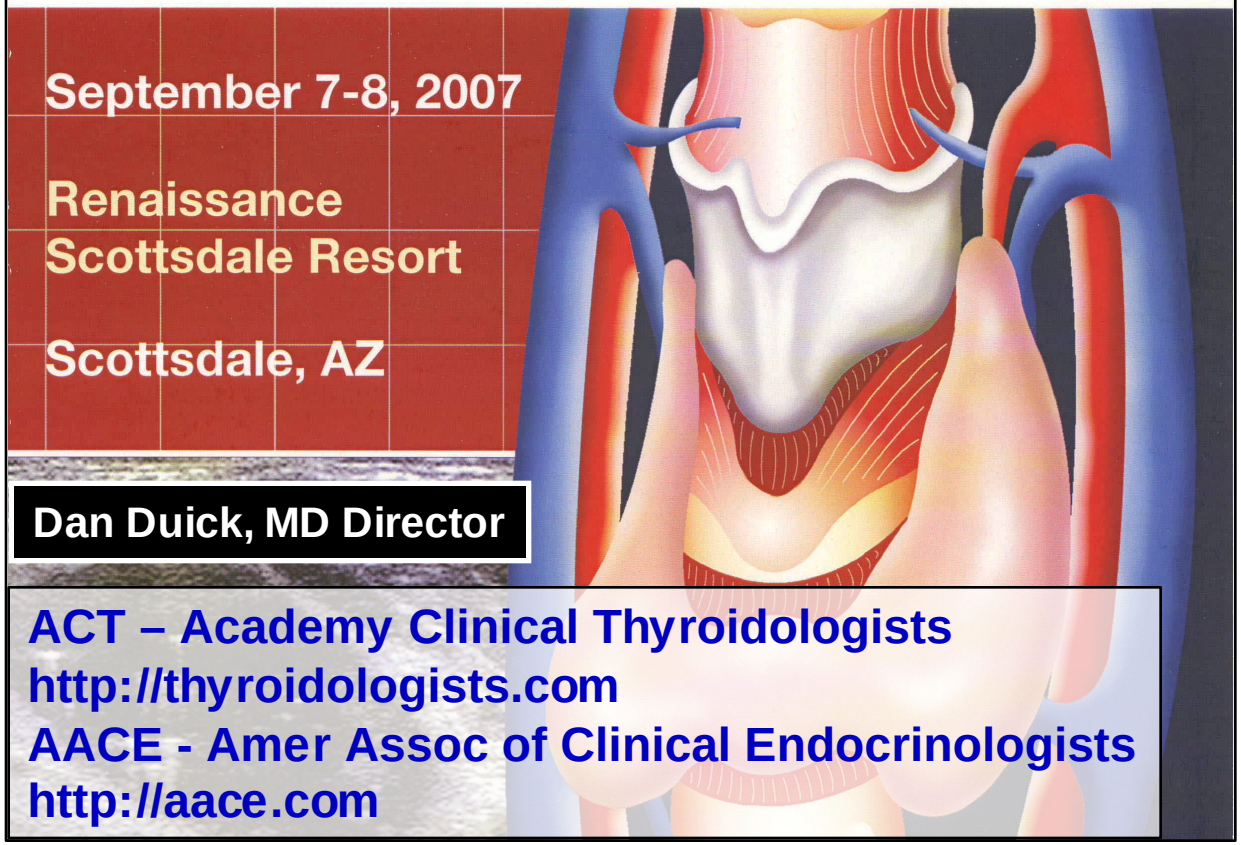
TECHNICAL SMEARING POVERTY

PROPER SMEARS
Teach it
Practice it
Demand it at S/O!!

Focus on Driver's Ed not Hi Tech Stretchers

PROPER SMEAR TRAINING & PERFORMANCE
LBP & CB NOT REPLACEMENT FOR IT

AACE Advances in Diagnostic & Interventional Endocrine Neck Ultrasound Course©



September 7-8, 2007

Renaissance
Scottsdale Resort

Scottsdale, AZ

Dan Duick, MD Director

ACT – Academy Clinical Thyroidologists
http://thyroidologists.com
AACE - Amer Assoc of Clinical Endocrinologists
http://aace.com

Thyroid US and UGFNA Biopsy*

Chapter 7 by Dan Duick

- The essence and desired outcome of UGFNA is the acquisition of cellular material and the production of smears on glass slide.
- The capability to produce quality smears of aspirated material cannot be overemphasized.
- For those with poor technical skills in slide preparation, the entire procedure is a worthless exercise and wasted opportunity.

*** H. Jack Baskin - 2008**

SMEARING TECHNIQUES

www.papsociety.org

Smearing Techniques

- **Purpose**
  - **Monolayer Dispersion**
  - **w/o Distortion**

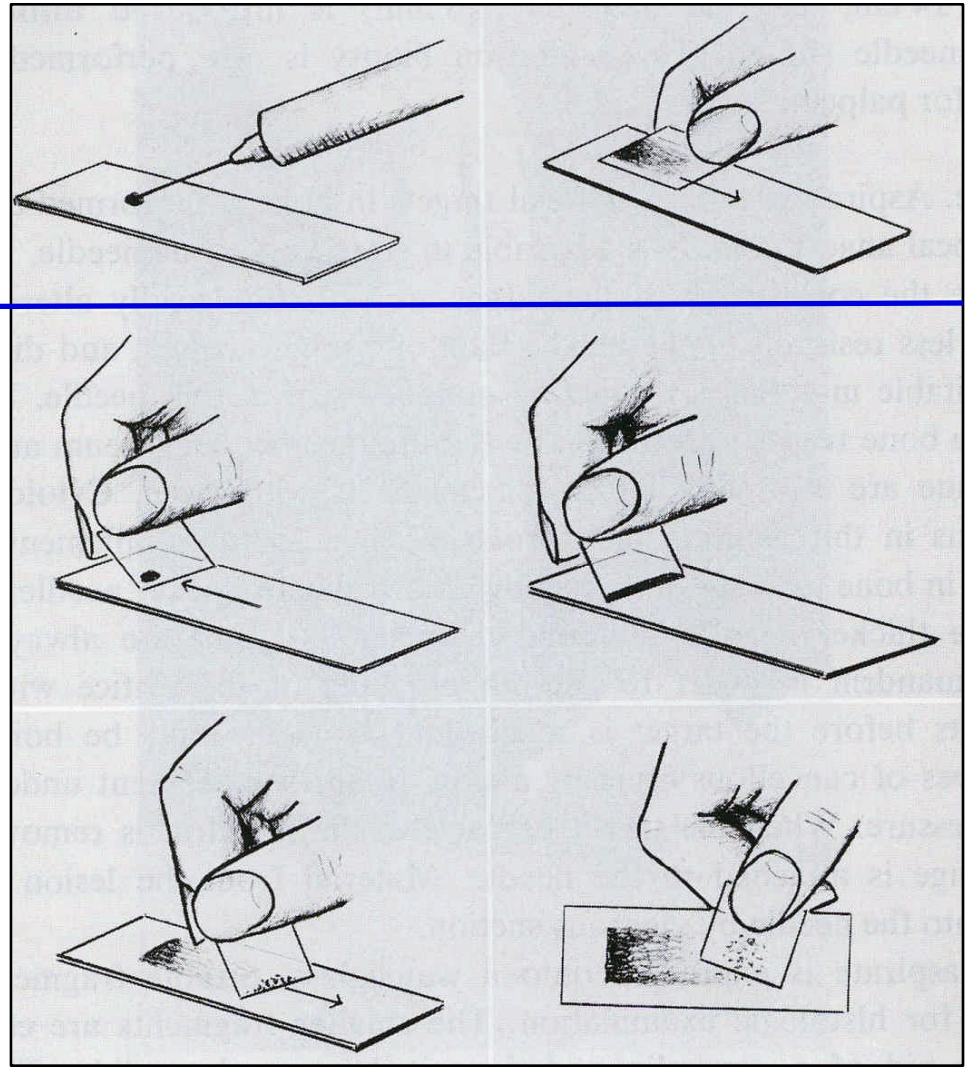
Character	Technique
• Semisolid →	One Step
• Thin Watery→	Two Step
• Fluid in Hub →	Snap
• Fluid in Syringe→	Pop

Diagn Cytopathol. 1985 Jan-Mar;1(1):59-65.

Original One & Two Step Technique – Zajicek 1974

One Step (Semisolid)

Two Step (Fluid)



Smearing Techniques for the Concentration of Particles from Fine Needle Aspiration Biopsy

JOHN S. ABELE, M.D., THEODORE R. MILLER, M.D., EILEEN B. KING, M.D., TORSTEN LOWHAGEN, M.D.

Fine needle aspiration biospy of palpable masses yields a variety of specimens. Some are fluid, whereas others are semisolid; some contain numerous particles, whereas others contain no identifiable particulate fragments. Not surprisingly, no single smearing technique can reasonably be expected to provide good results with such a variety of specimens. This article describes a family of techniques, of which one or more are applicable to virtually any fine needle aspiration biopsy specimen. The techniques described and illustrated include the two-step, one-step, absorption, and watch-glass techniques.

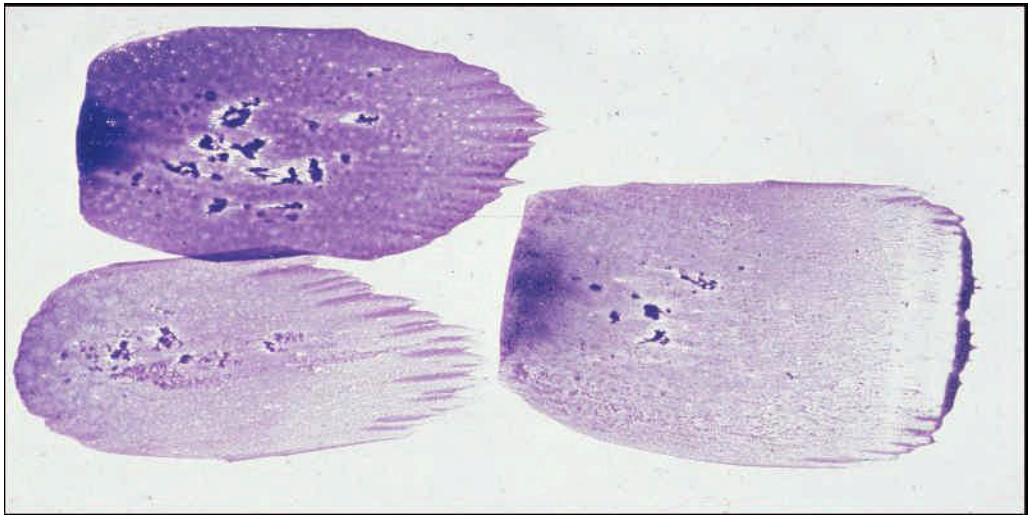
KEY WORDS: Fine needle aspiration; Biopsy technique; Slide preparatory technique

tions of smearing techniques are brief and do not address the common problem of fluid dilution.[1,3–8] A recent monograph on fine needle aspiration contains only a brief paragraph on slide preparation.[9]

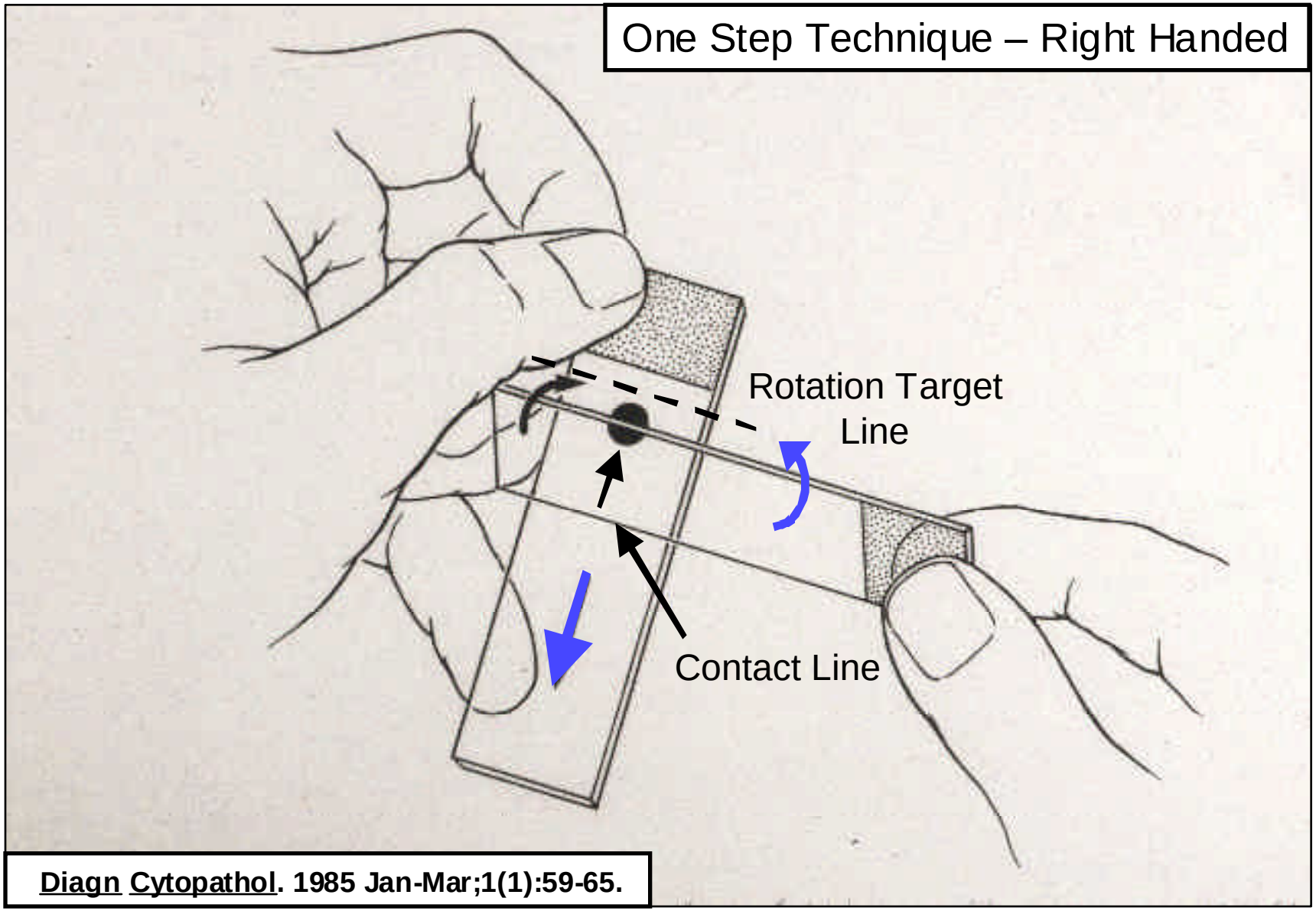
At the Karolinska Institute in Stockholm, a variety of techniques are used to make smears from aspirates, particularly from diluted aspirates. These techniques were initially introduced by one of the pioneers of fine needle aspiration biopsy, the late Joseph Zajicek. They have been refined over the past 10 years. In this article, we will illustrate and describe in detail our basic particle

Diagn Cytopathol. 1985 Jan-Mar;1(1):59-65.

One Step Technique

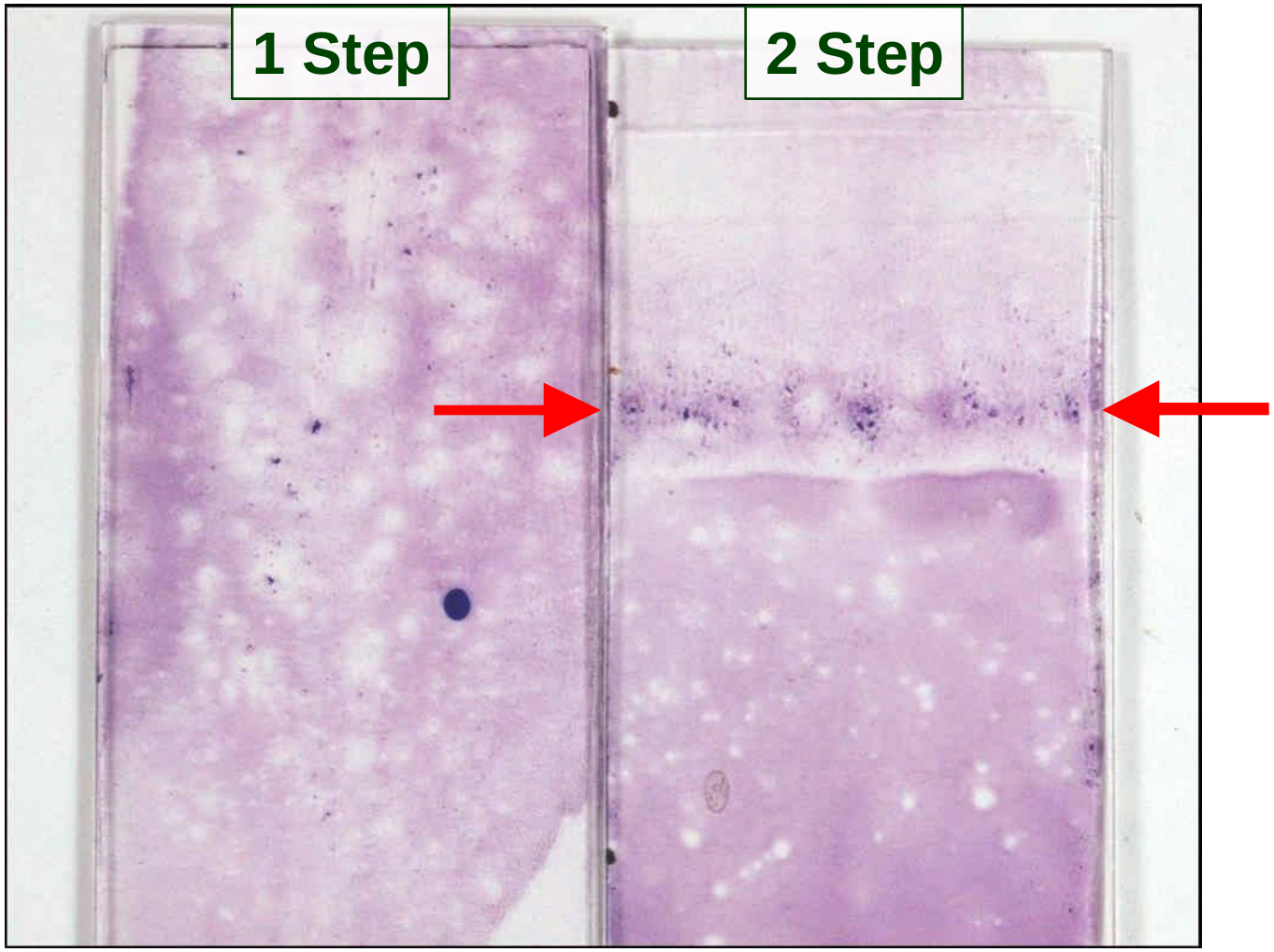


One Step Technique – Right Handed



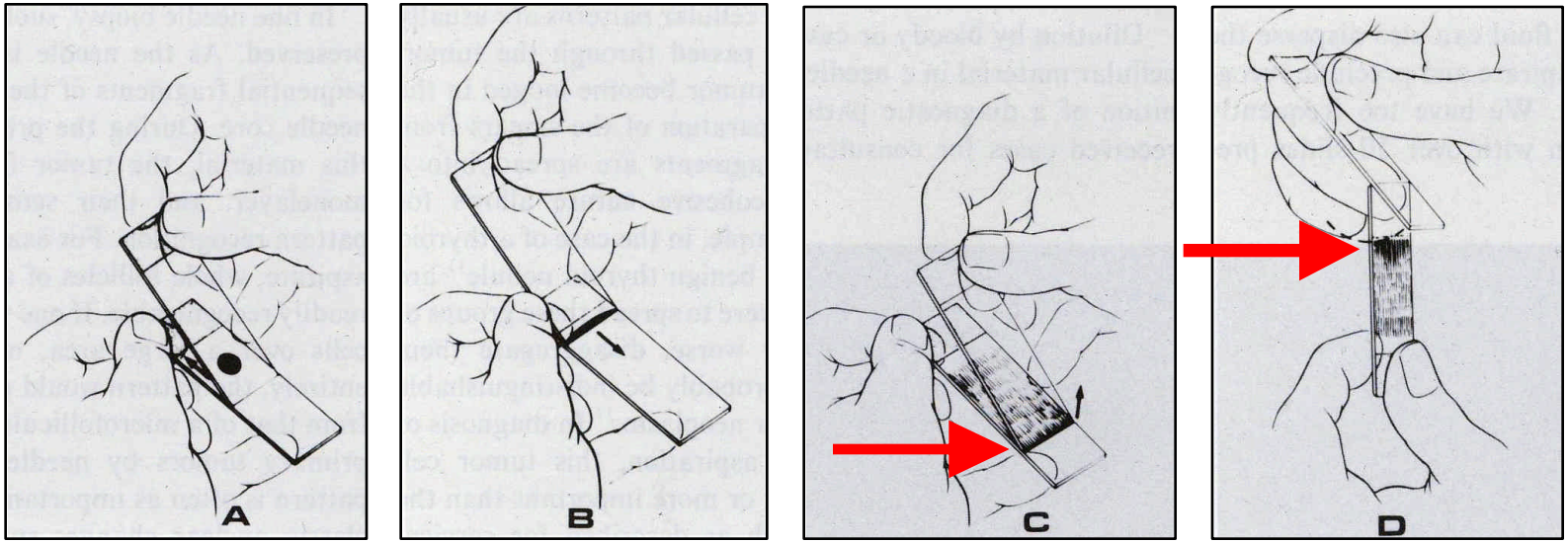
Diagn Cytopathol. 1985 Jan-Mar;1(1):59-65.

Two Step Technique



Two Step Technique

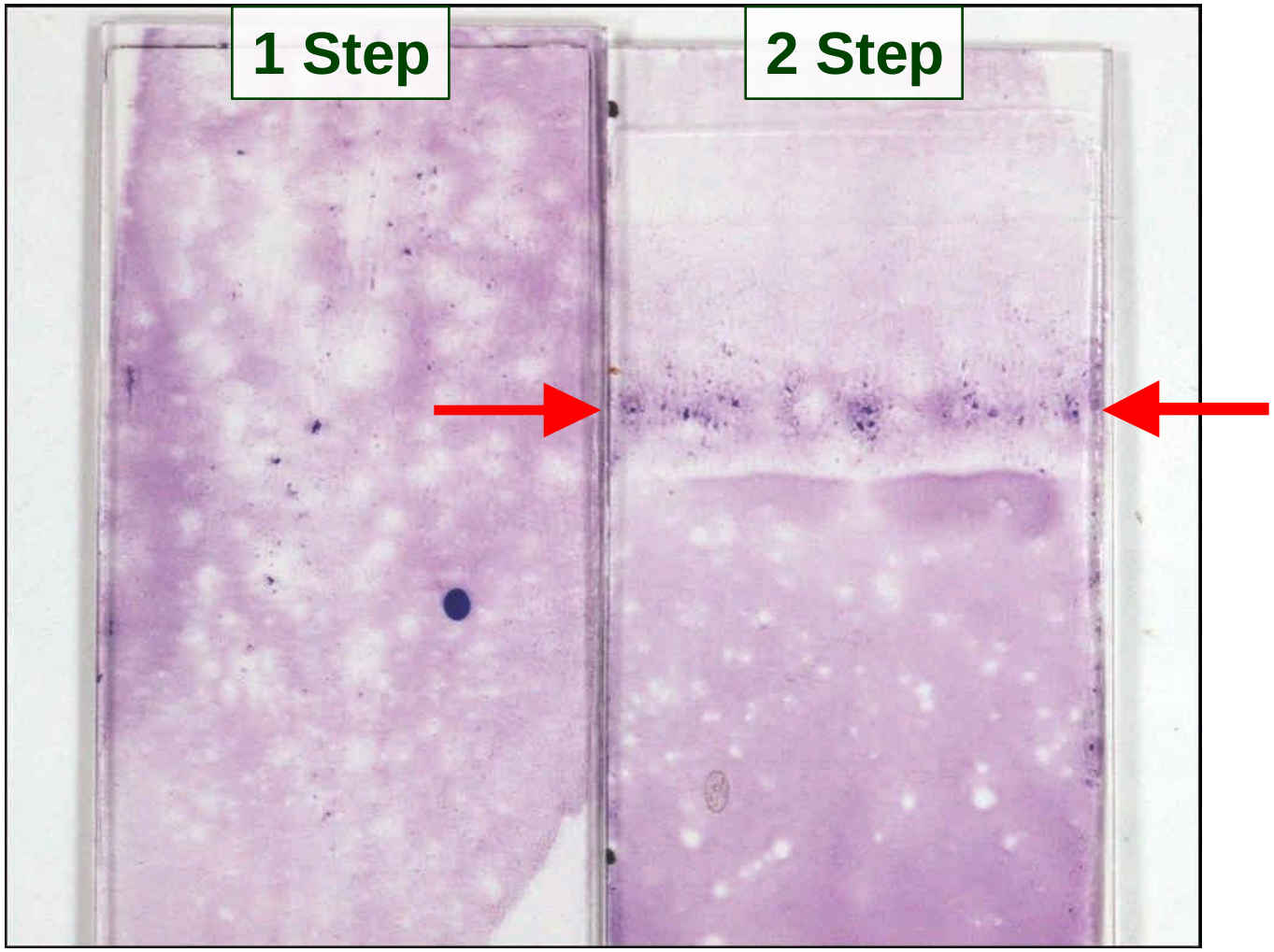
Diagn Cytopathol. 1985 Jan-Mar;1(1):59-65.



Slides Joined Parallel | **Collected** | **Concentrated** | **Slide Vertical Back Flow Smear**

|---------- First Step ----------‖--- 2ed Step ---|

Two Step Technique

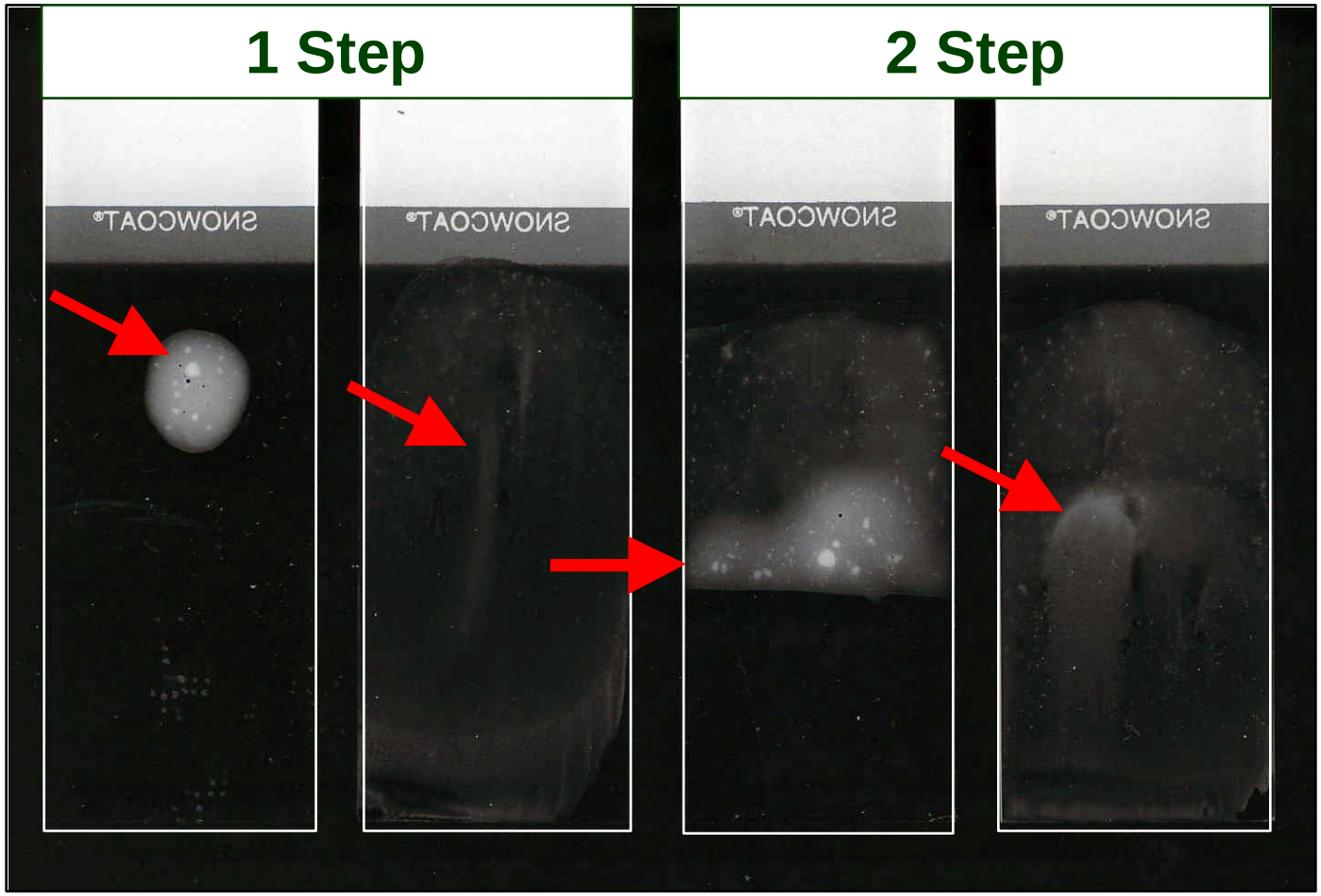


SMEARING TECHNIQUES

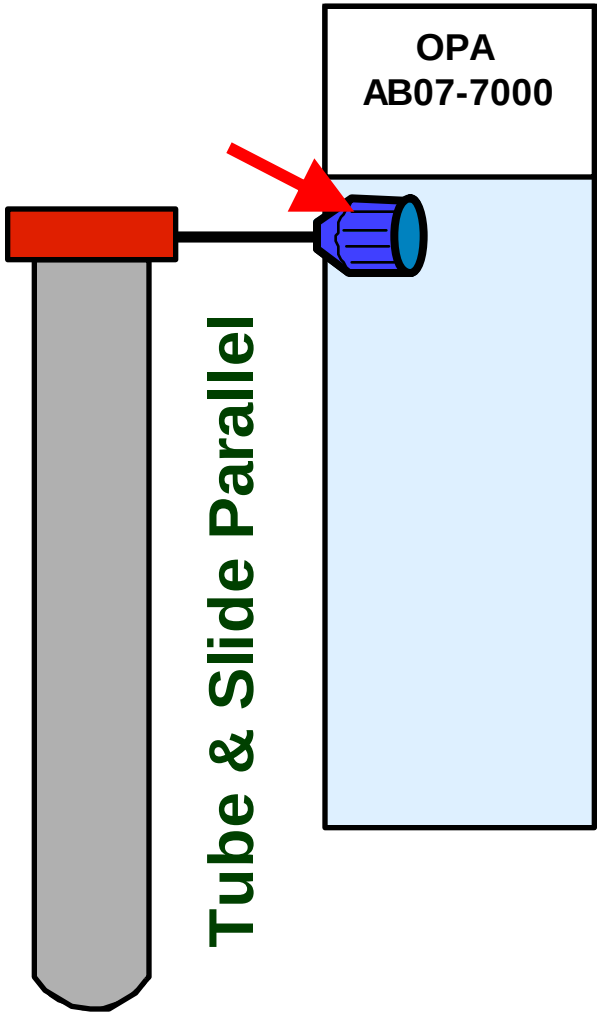
TEACHING / PRACTICE MEDIUM

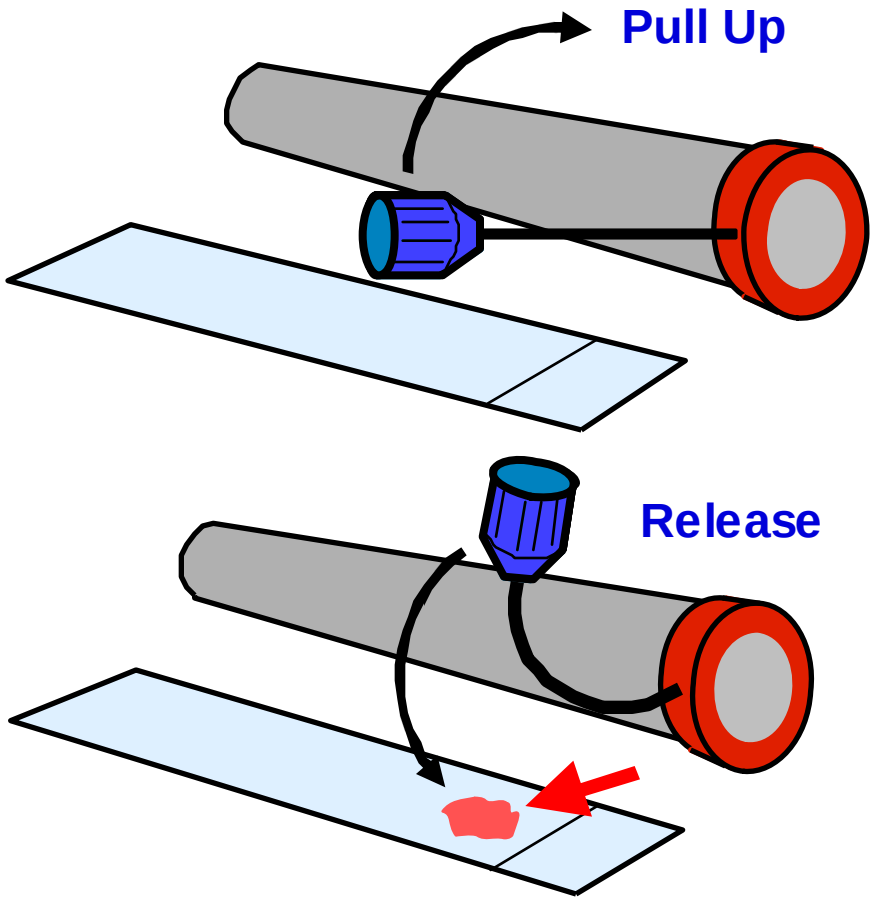
SMEARING TECHNIQUES

TEACHING / PRACTICE MEDIUM

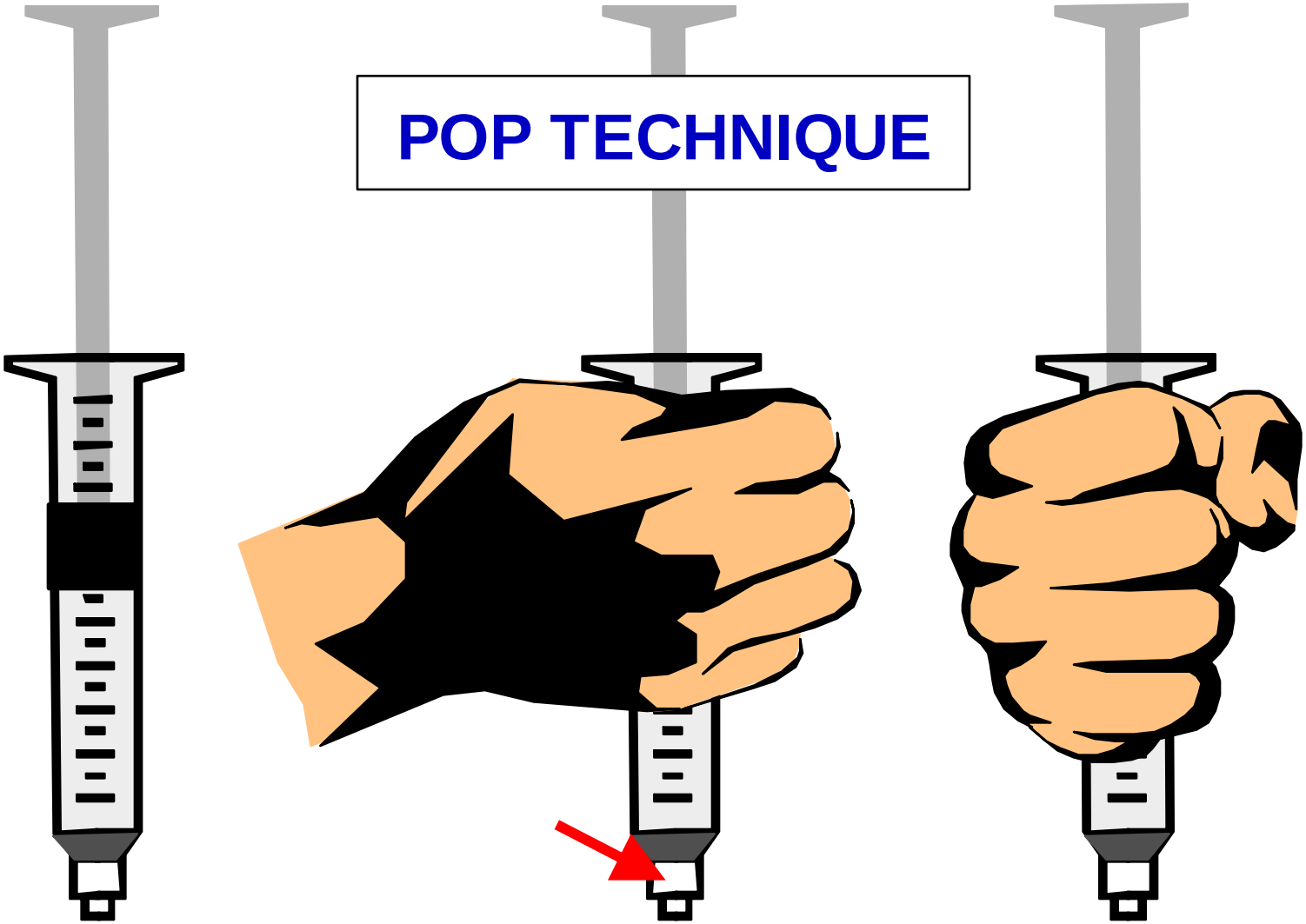


SNAP TECHNIQUE

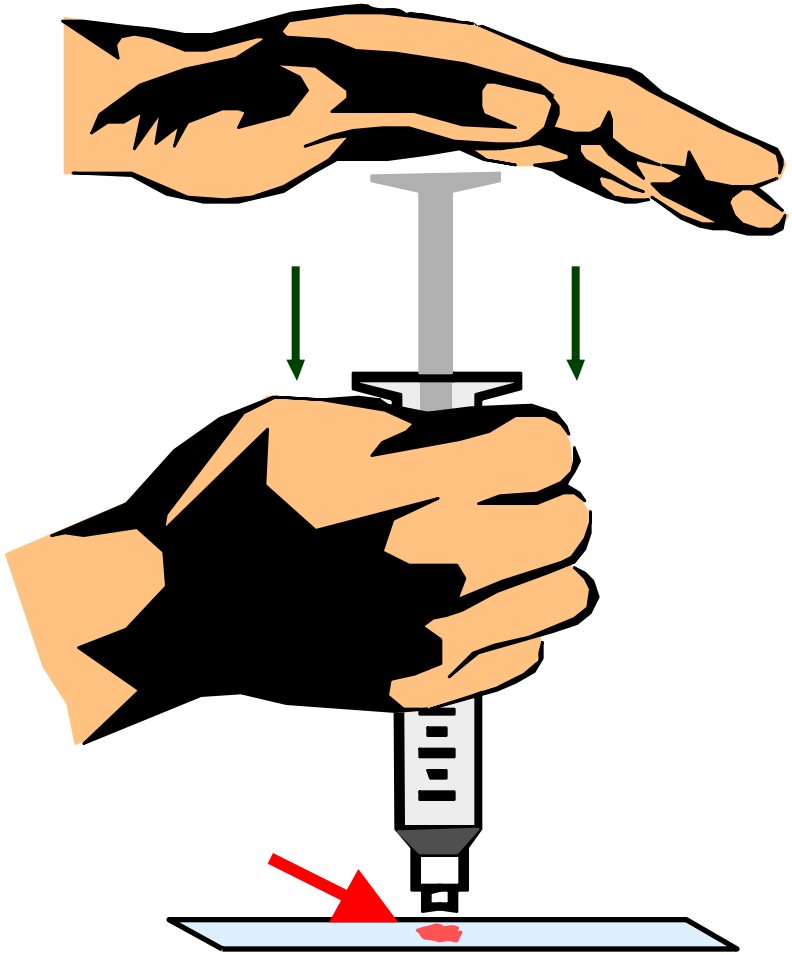




POP TECHNIQUE



POP TECHNIQUE



A. Devises, Needles, & Methods: Conclusions

- Needles: Long Bevel (IM) 27-25G
  - Bx Cadence: 3/Sec for 3-5 seconds (bml)
  - 1 Bx → 1-2 slides
  - Rotation Optional
  - Vascular – Single thrust
- Zajdela Technique usually Sufficient
  - Suction and Cysts (IV Extension Tubing)
- Teach / Demand HIGH QUALITY SMEARS
  - Smearing Technique = Bx Technique
  - www.papsociety.com "PSCO Guidelines"