Needle Tapering
for Improved Biopsy Performance

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Objectives
- DESIGN, MANUFACTURE, and TEST a tapered profile on needles used for breast cancer biopsies.

Breast Cancer Biopsies
1. Fine needle aspiration
2. Core needle biopsy
3. Surgical biopsy

DESIGN

Internal Surface Finishing

External Surface Finishing

MAGNETIC AND ABRASIVE PARTICLES

Rubber magnet
Diamond abrasive
Abrasive: MgO
Abrasive: Magnetic abrasive

Wall Thickness Removal

Needle Insertion Test

Conclusion

Needles with a small wall thickness and smooth inner and outer surfaces generate smaller insertion forces than needles with larger wall thicknesses and rougher surfaces.

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