



**HAL**  
open science

# Aso author reflections: diagnostic accuracy of nipple aspirate fluid cytology in asymptomatic patients and its predictive validity on future risk of breast cancer: a meta-analysis and systematic review of the literature

Natasha Jiwa, Zoltan Takats, Daniel Richard Leff

## ► To cite this version:

Natasha Jiwa, Zoltan Takats, Daniel Richard Leff. Aso author reflections: diagnostic accuracy of nipple aspirate fluid cytology in asymptomatic patients and its predictive validity on future risk of breast cancer: a meta-analysis and systematic review of the literature. *Annals of Surgical Oncology*, 2020, *Annals of surgical oncology*, 28, pp.3761-3762. 10.1245/s10434-020-09355-z . hal-04065733

**HAL Id: hal-04065733**

**<https://hal.univ-lille.fr/hal-04065733>**

Submitted on 28 Apr 2023

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution| 4.0 International License



# ASO Author Reflections: Diagnostic Accuracy of Nipple Aspirate Fluid Cytology in Asymptomatic Patients and Its Predictive Validity on Future Risk of Breast Cancer: A Meta-Analysis and Systematic Review of the Literature

Natasha Jiwa, BSc, MRCS<sup>1,2</sup>, Zoltan Takats, PhD<sup>1</sup>, and Daniel Richard Leff, MS (Hons), PhD, FRCS<sup>1,2</sup>

<sup>1</sup>Department of Surgery and Cancer, Imperial College London, London, UK; <sup>2</sup>Department of Breast Surgery, Imperial Healthcare Trust, London, UK

## PAST

Nipple aspirate fluid (NAF) is thought to reflect the microenvironment of a developing breast cancer and therefore is considered an important biofluid to interrogate for diagnostic purposes.<sup>1</sup> Cytopathology as a technique was invented and used in the 1920s by George Papanicolaou for early diagnosis of reproductive tract cancer, whereby he was able to readily distinguish between normal and malignant cells in the cervix.<sup>2</sup> His technique has been used since the 1950s as a “gold standard” diagnostic method for women presenting with symptomatic nipple discharge of the breast. Its potential use as a screening tool has been investigated in the past,<sup>3</sup> but its diagnostic accuracy for use as a screening tool remains unquantified.

## PRESENT

A meta-analysis of all English language research studies was performed, providing diagnostic information on the cytology of NAF across three databases and taking into account their quality scoring. The authors concluded that the diagnostic accuracy of NAF showed a pooled specificity of 0.97 (95% confidence interval [CI], 0.97–0.98) and a sensitivity of 0.64 (95% CI 0.62–0.66). Of the patients who produced a sample across all studies, 38.97% provided

an inadequate sample for cytologic analysis.<sup>4</sup> The key implication of this report is that NAF cytology is limited by poor sensitivity secondary to pauci-cellular material. This limitation therefore questions its role as a screening tool in clinical practice. The wider implications of this meta-analysis lie in what other methods of interrogating nipple aspirate fluid exist, either as stand-alone tests or indeed as adjuncts to current screening pathways for breast cancer.

## FUTURE

In the search for superior methods of nipple fluid assessment, emerging technologies for fluid biomarker analysis must supersede the current diagnostic accuracy of NAF cytology while taking into account other important factors such as cost effectiveness, reproducibility of results, user dependency, and turn-around time in the laboratory. Future work should focus on addressing these issues if cytology is to be replaced in clinical practice.

**OPEN ACCESS** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

© The Author(s) 2020

First Received: 27 October 2020

Accepted: 27 October 2020;

Published Online: 18 November 2020

N. Jiwa, BSc, MRCS

e-mail: natasha.jiwa04@imperial.ac.uk

**REFERENCES**

1. Fabian CJ, Kimler BF. Breast cancer risk prediction: should nipple aspiration fluid cytology be incorporated into clinical practice? Oxford: Oxford University Press; 2001.
2. Tan SY, Tatsumura Y. George Papanicolaou (1883–1962): discoverer of the Pap smear. *Singapore Med J*. 2015;56:586.
3. Twelves D, Nerurkar A, Osin P, Ward A, Isacke CM, Gui GPH. The feasibility of nipple aspiration and duct lavage to evaluate the breast duct epithelium of women with increased breast cancer risk. *Eur J Cancer*. 2013;49:65–71.
4. Jiwa N, Gandhewar R, Chauhan H, Ashrafian H, Kumar S, Wright C, Takats Z, Leff D. Diagnostic accuracy of nipple aspirate fluid cytology in asymptomatic patients: a meta-analysis and systematic review of the literature. *Ann Surg Oncol*. 2020. <https://doi.org/10.1245/s10434-020-09313-9>.

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.