ROSE in **EUS** guided FNA of **Pancreatic Lesions**

Guy's Hospital, London, **16 April 2018**

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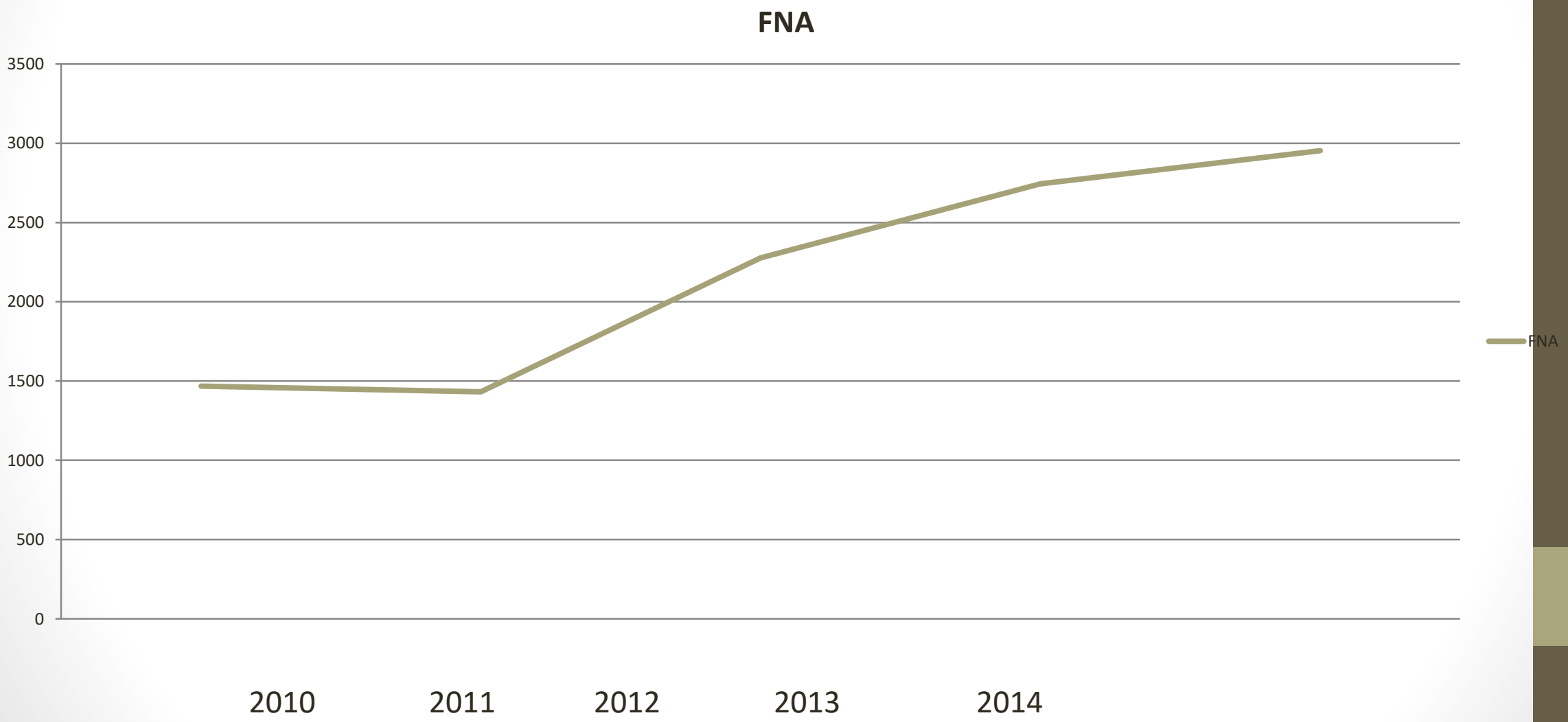
Imperial College NHS Trust **Cytology Workload**

- Cervical Cytology **57,500** (decreases **8-10%/**year)
- Diagnostic Cytology **10,500** of which 30% FNA (increases **5%/**year)
- **FNA clinic** managed by *cytopathologist* **terminated**
- Most FNA by **U/S**, **EUS**, **EBUS**, few by CT
- **600** EUS/EBUS in 2017
- The rest done by clinicians in the **Rapid** access clinics (**Head**&Neck, **Thy**roid, **Br**east, **Lymph**nodes)

No of FNA cases



Pancreatic Mass: **Solid** or **Cystic?**

- **Solid Pancreatic masses**
  - Ductal Adenocarcinoma
    - **typical**
    - **variant**
  - Chronic Pancreatitis
  - Acinar Cell Carcinoma
  - Pancreatic Endocrine Tumour (PNET)
  - Pancreatoblastoma

- **Cystic pancreatic masses**
  - Pseudocyst
  - Serous Cystadenoma
  - Solid pseudopapillary tumour
  - Mucinous cyst
    - **MCN**
    - **IPMN**

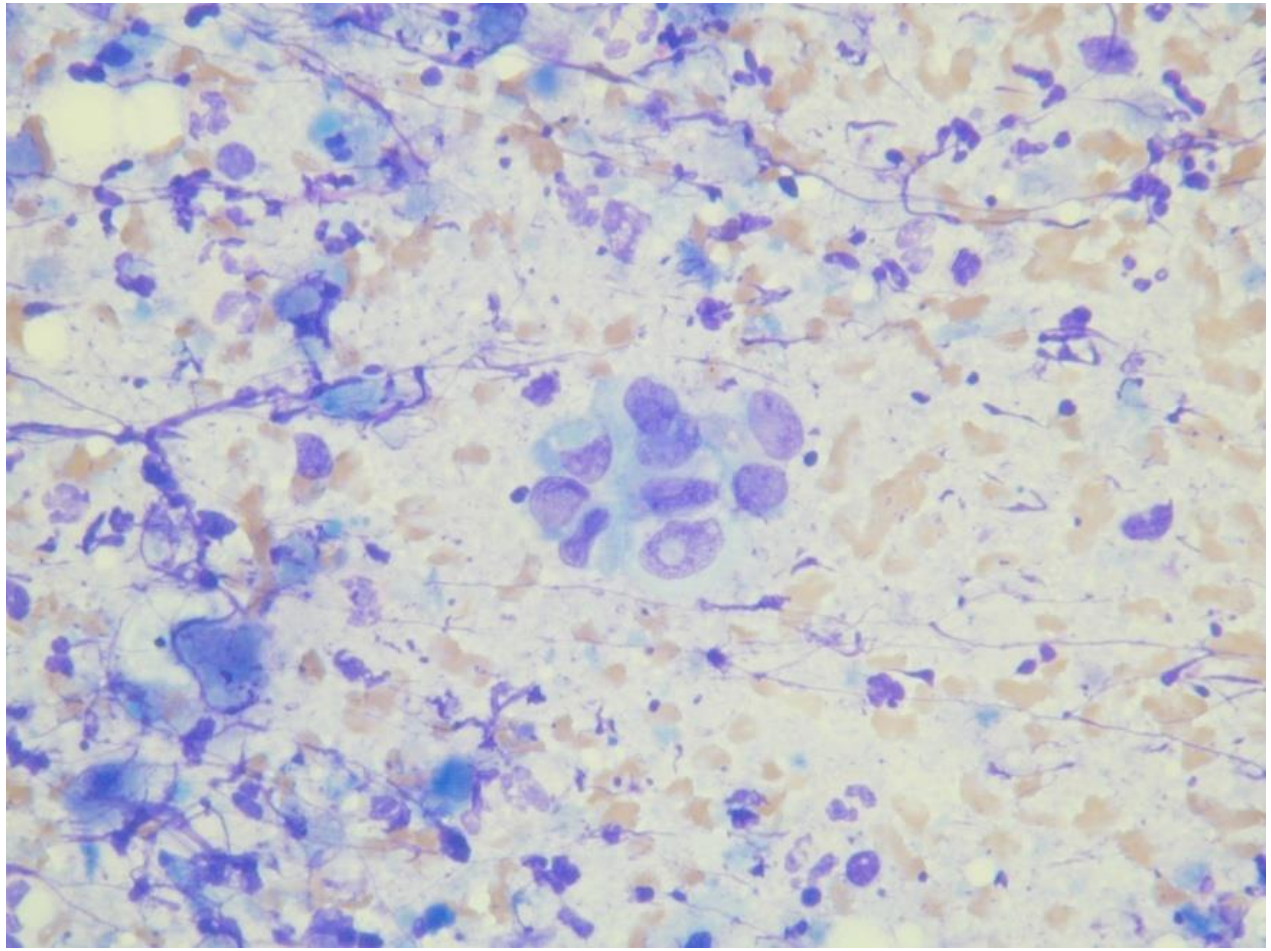
Handling of ROSE samples: the **BMS**

- Direct **air dried Diff Quick** smears
- Assess whether **there is material**
- If **yes**, is it *representative* of the **intended site?**
- Is there **contamination?** (depends **on Pathway** of site)
- HOP(**duodenal**), TOP (**gastric**), Hilum (**liver**), **adrenal**, **mesothelial**
- Is it a **solid** or **cystic mass?**

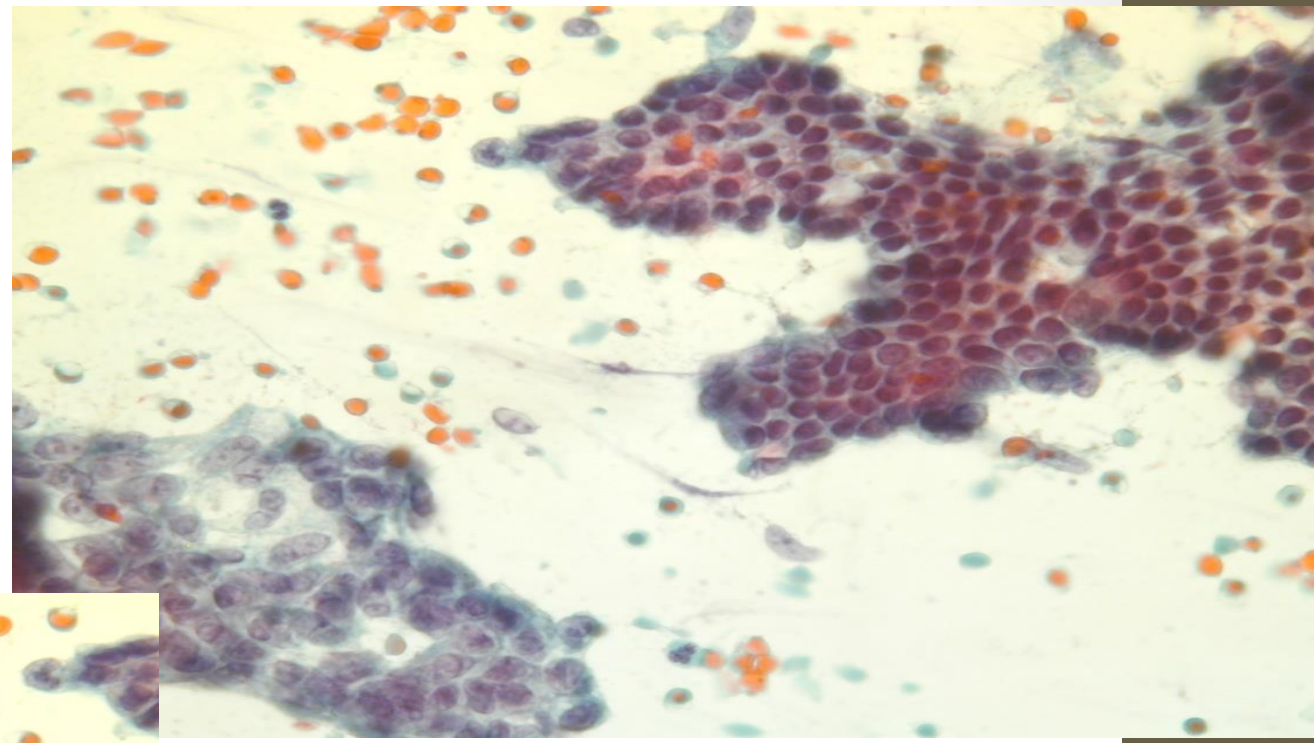
Role of the **BMS**

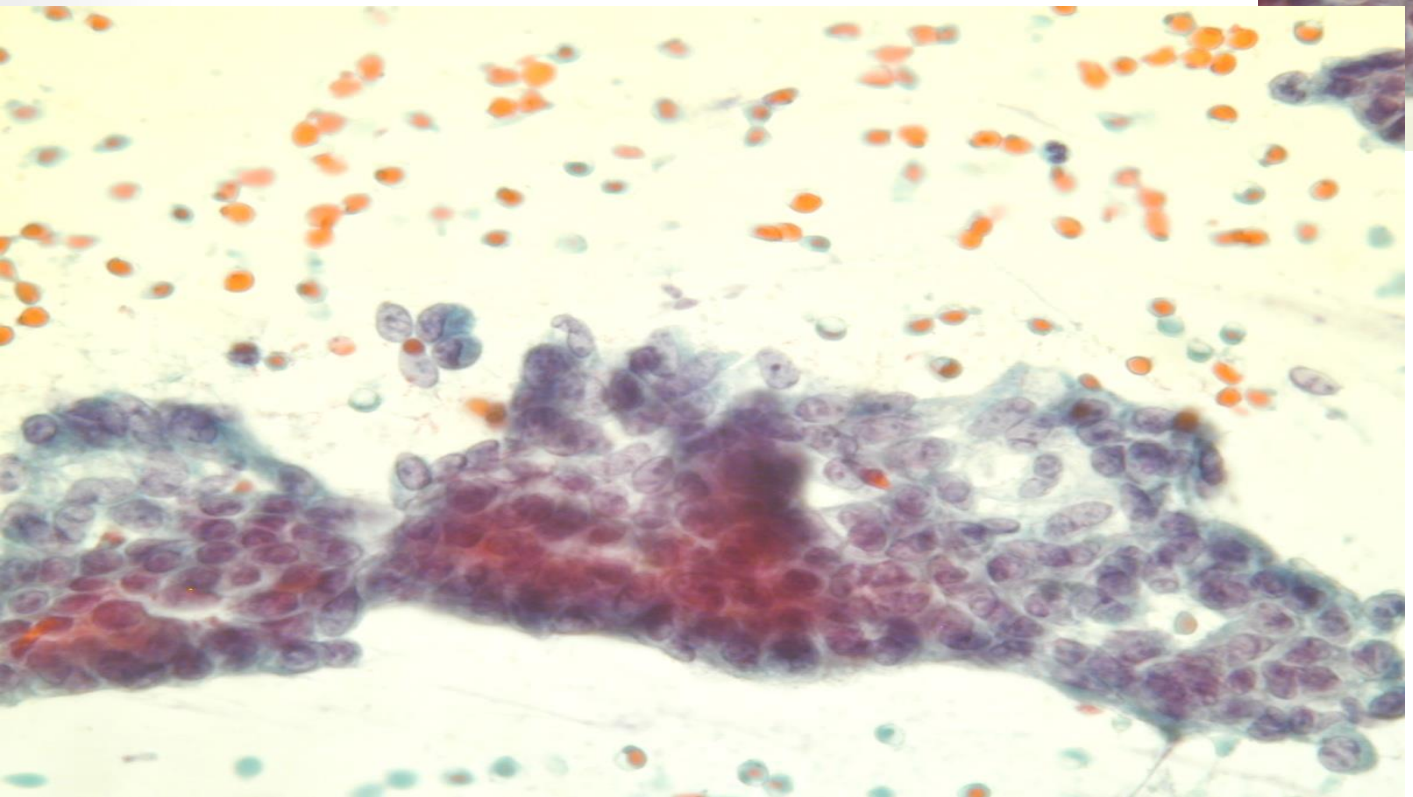
- Check **Clinical Details**
- Liaise *with* **endoscopist** *regarding* the query
- Check *whether* **representative**
- **Suggest** *further*…… studies (?lymphoma for Flow Cytometry)
- If atypical cells present, ask for **dedicated pass** in **LBC**

Adenocarcinoma



Difficult Differential Diagnosis:
Reactive ductal atypia in chronic pancreatitis vs. better differentiated adenocarcinoma





BSCC Code of Practice--Fine Needle Aspiration Cytology.

Kocjan G1, Chandra A, Cross P, Denton K, Giles T, Herbert A, Smith P, Remedios D, Wilson P.
Cytopathology. 2009 Oct;20(5):283-96.

- FNA cytology has been shown to be a **cost-effective**, **reliable technique** its accurate **interpretation** *depends* on obtaining adequately cellular samples prepared to a high standard.

- Its **accu**racy and **cost-effec**tiveness can be **seriously compromised** by *inadequate* samples

Cont….

- Cytopathologists, Radiologists, Nurses or Clinicians may take FNAs, they must be adequately **trained**, **experienced** and subject to **regular audit.**
- **The best results are obtained:**

- **when a pathologist or an experienced & trained Biomedical Scientist (cytotechnologist) provides immediate on-site assessment of sample adequacy &**
- **whether or not the FNA requires image-guidance**.

EUS-guided FNA for diagnosis of **solid** pancreatic neoplasms: A meta-analysis GIE 2012

- 33 studies, 12 retrospective, **21 prospective**
- 4,984 patients
- Sensitivity for malignancy 85-91 %
- Specificity " " 94-98%
- PPV 98-99%
- NPV 65-72%

EUS-guided FNA for diagnosis of solid pancreatic neoplasms

- **False -ve** results up to 20-40 %
- **False +ive** very rare

Optimizing **Diagnostic yield** from EUS-FNA.
Cytopathology June 2013

- ROSE increases diagnostic sensitivity **&** accuracy of FNA for solid pancreatic masses by up to 10-15 %

- Meta-analysis of 34 studies with 3644 patients :

ROSE : p=0.001 for accuracy

Costs

- 1 EUS procedure **=** 1hour (45'+15')
- 1 session/week of a cytopathologist (3.5 hours=**£9700** gross/year)
- 1 session/week of a BMS gr7 = **£2700**

BMS Training Course in CT/US guided FNA Cytology
Imperial College NHS Trust,
Dept. of Cellular Pathology

- **Aim of the course**:

- Provide training to senior cytology BMSs in order to assist Radiologists and clinicians in the evaluation of cytological material obtained through CT/US guided FNAs including EUS and EBUS procedures

- Maximize the **potential** of cytological material for diagnostic **ancillary techniques** & **research protocols**

The course will run in 3 hour sessions on Tuesday morning (half day) from 10.00 to 13.00 on a weekly basis including **lectures** by **BMSs, cytopathologists, radiologists** and **clinicians**

March 11, 9 am- Cytology of respiratory tract
Dr Onn Kon - Indications and Clinical setting
Dr C Wright - EBUS

March 18, 10 am - Cytology of respiratory tract
Dr F Mauri – Lung Pathology
Dr F Mauri - Cytology and ancillary techniques

March 26, 14.00 – 14.45 Lung and Thyroid
Dr N Strickland - CT guided FNA
Dr R Dina – Thyroid Cytology and ancillary techniques

April 1, 10 am - FNA of Thyroid
Mr F Palazzo - Clinical setting
Dr M Crofton - - US guided FNA of thyroid nodules

April 8, 10 am - FNA of pancreas and cytology of biliary tract
Dr P Vlavianos - Clinical setting
Dr R Dina - Cytology and ancillary techniques

April 15, 10 am – FNA of head and neck
Dr A Sandison - Clinical setting and Pathology
Dr D Blunt - US guided FNA of head and neck
Dr R Dina – Head and neck cytology
May – Assessment and Evaluation

Current **setting**

- All U/S-guided **FNAs at HH** if ROSE requested are attended by a senior BMS gr7

- All U/S-guided **FNAs at SMH** smeared by the Radiologists (trained)
- All EUS-guided FNAs attended by a BMS gr7
- EBUS-guided FNAs attended by a BMS **if** granulomas suspected (TB or sarcoid),
- But by a cytopathologist **if** cancer suspicion/staging

- **Diagn Cytopathol.** 2018 Apr;46(4):293-298 **(ROSE vs non ROSE)**

230 specimens (218 patients) were obtained from:

- **pancreas** (114), **lymph node** (64), *submucosal lesions* of the **GI tract** (27), **liver** (8), and **miscellaneous** (17) sites.
- The results were classified as informative (77.8%) and non-informative (NI) (22.2%).

The **NI** rate was significantly high, when a cytopathologist was **absent** (P = .0008)

Diagn Cytopathol. 2018 Feb;46(2):154-159 **(cyto vs core biopsy)**

A total of **48 patients** with solid pancreatic lesions were evaluated.
The proportions of adequate samples were **48/48** (100%) for FNA

and

45/48 (93.7%) for core biopsy (P = .24). The diagnostic yield was **42/48** (87.5%) and **33/48** (68.7%) for FNA and CNB respectively (P = .046).
The incremental increase in diagnostic yield by combining both methods was **2/48** (4%).
The diagnostic yield for malignancy was **30/32** (93.7%) for FNA and **23/32** (71.8%) for CNB (P = .043).
The **sensitivity** for the diagnosis of malignancy for:
FNA **90.6%** and CNB were **69%,** (P = .045).

TO **ROSE** OR **NOT TO ROSE**?

- J Gastroenterol Hepatol. 2014 Apr;29(4):697-705. (metanalysis)

The search produced **3822** original studies, of which 70 studies met our inclusion criteria. The overall average adequacy rate was **96.2%** (95% confidence interval: 95.5, 96.9).

ROSE was associated with a *statistically significant improvement* of up to **3.5%** in adequacy rates. There was heterogeneity in adequacy rates across all subgroups.

No association between the assessor type and adequacy rates was found.

Studies with ROSE have **high per-case adequacy** and a **relatively high number of needle passes** in contrast to non-ROSE studies.

Causes of discordance between Cytology & Histology in pancreatic lesions: the experience at Imperial College NHS Trust.

M. El Shiek, R.Dina

- All pancreatic FNA cytology specimens performed in our department from 2013 to 2016 with corresponding subsequent **surgical specimens** were identified.
- For each case the reported cytological category was recorded (**C1** – inadequate,**C2** – benign,**C3** – atypical; mucinous lesions, endocrine lesions, **C4**–suspicious for malignancy, **C5**–malignant).
- The **final surgical diagnosis** was recorded. Discordant cases (**benign histo** vs **C4,C5** cytology or **malignant histo** vs **C2,C3 cytology**), were retrieved from filing archives and reviewed by a cytopathologist blinded to the previous results. The cytological categories on review were **compared to those** originally reported.

Causes of discordance between cytology and histology in pancreatic lesions: the experience at Imperial College NHS Trust.

M. El Shiek, R.Dina

- A total of **75 cytology specimens** with corresponding surgical specimens were identified.
- A total of **17 cases** (22.6%) were discordant.
- **Six** out of **14** reviewed cases were confirmed to be correctly categorised (42.8%), the discordance due to nonrepresentative sampling.
- Remaining **eight** cases (67.2%), **2** were interpreted as inadequate (C1) while **6** were given a different cytological category on review which was at most one tier above or below the **original** cytological **diagnosis**.

THANKS