Is ultrasonography-guided modified coaxial core biopsy of the breast a better technique?

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Objective To compare the diagnostic rate, patient comfort, and complications of ultrasonography-guided breast biopsy using a modified coaxial technique with ultrasonography-guided fine needle aspiration and traditional core biopsy. A secondary objective was to describe the use of the coaxial technique for the biopsy of breast lesions and our initial experience.

Design Retrospective study.

Setting A regional hospital in Hong Kong.

Patients Patients, who were referred for ultrasonography-guided fine needle aspiration or biopsy from 23 November 2007 to 19 March 2008, were divided into three groups. For breast lesions of 8 mm or smaller, fine needle aspirations were performed. For breast lesions larger than 8 mm, the patients were randomly divided into groups receiving traditional core biopsies and coaxial biopsies. The pathological reports were reviewed.

Main outcome measures Diagnostic rate, patient comfort assessed in terms of pain, and any procedural complications.

Results A total of 45 ultrasonography-guided fine needle aspirations or biopsies of breast lesions were performed. All core biopsies using the traditional core technique (n=15) and coaxial technique (n=16) were diagnostic. While for fine needle aspirations, three (21%) of 14 were not diagnostic and repeat biopsies were undertaken for the corresponding patients. Except for one breast lesion biopsied with the coaxial technique that revealed invasive ductal carcinoma, all others yielded benign lesions. The average pain score for coaxial biopsies was 2.2, while for traditional core biopsies and fine needle aspirations, average scores were 3.7 and 3.8, respectively (P=0.022). No procedure-related complication was documented with either of the three techniques.

Conclusion Modified coaxial core biopsy of the breast has an optimal diagnostic rate and hence avoids the need for repeat biopsies. It is associated with better patient comfort and no increase in the risk of complications.

Introduction

Ultrasoundography (USG)-guided fine needle aspiration (FNA) and biopsy to characterise breast lesions are very common in our daily practice. Regarding different biopsy procedures, FNA and core biopsies are frequently performed, whereas USG-guided mammotome biopsy and excisional biopsy are less frequently utilised.

Coaxial core biopsy of breast lesions is gaining popularity. It is not only used with USG guidance, but other methods are also being developed to perform it under stereotactic guidance with magnetic resonance imaging. However we do not have local data supporting the utilisation of this biopsy technique in Hong Kong. In order to overcome this information deficiency about modified coaxial biopsy in local hospitals, we conducted a retrospective study. Our objective was to compare the diagnostic rate, degree of patient comfort, and the rate of procedure-related complications encountered with the traditional core biopsy, the modified coaxial core biopsy, and FNA under USG guidance.

Methods

From 23 November 2007 to 19 March 2008, patients referred for USG-guided breast FNA

Key words Biopsy, fine-needle; Breast neoplasms; Pain measurement; Ultrasonography, mammary

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或穿刺等进行回顾。对于病理学结果前次未成功者，则予以排除。其余的病人被分为三组。对于肿瘤直径在8 mm或以下的病人，进行细针穿刺(FNA)；对于直径在8 mm以上的病人，则随机分配到传统穿刺活检组或改良同轴穿刺活检组。最后回顾病人的病理报告。

### 主要结果测量

- **诊断率**：用疼痛指数作为病人舒适度的指标，以及与手术有关的并发症。

### 结果

共招募了45位病人，他们的年龄范围从27到70岁，平均年龄为48岁。三组病人的平均年龄无显著差异（Table）。

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Mean age (SD)</th>
<th>Diagnostic rate (%)</th>
<th>Mean pain score (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FNA</td>
<td>47 (10)</td>
<td>79</td>
<td>3.8 (1.9)</td>
</tr>
<tr>
<td>Core biopsy</td>
<td>50 (11)</td>
<td>100</td>
<td>3.7 (2.3)</td>
</tr>
<tr>
<td>Coaxial biopsy</td>
<td>47 (11)</td>
<td>100</td>
<td>2.2 (1.1)</td>
</tr>
</tbody>
</table>

### 超声波导向改良同轴穿刺乳腺活检技术是否更好？

**目的**

比较超声波导引改良同轴穿刺乳腺活检、超声波导引细针穿刺及传统穿刺活检三种技术，于诊断率、病人舒适度及併发率的分别，並描述使用同轴穿刺乳腺活检術的经验。

**设计**

回顾研究。

**安排**

香港一所地區医院。

**患者**

2007年11月23日至2008年3月19日期間，被轉介作超声波导引乳腺细针穿刺术或传统乳腺活检术的病人共分為3组。乳腺肿瘤为8 mm或以下的病人接受细针穿刺术；8 mm或以上的病人则被隨机分配至傳統穿刺活檢術及同軸穿刺活檢術兩組。最後回顧病人的病理報告。

### 结论

使用改良同轴穿刺乳腺活检術有令人满意的结果，也避免了需要重複穿刺，提高病人的舒適度，亦未有增加併發症的風險。
comfort and no increase in complications.

In our study, there was no statistically significant difference in age among the three groups, and all the procedures were undertaken by a single experienced breast radiologist. Thus, patient age and operator-dependent factors were unlikely to have been confounding factors. Ultrasonography-guided FNA yielded the lowest diagnostic rate, which could be accounted for by the smaller lesion sizes. However, it also yielded the highest mean pain score, which we inferred was due to the technique and not the lesion size.

Generally three to four biopsy specimens would be needed to consider sampling as adequate. Modified coaxial biopsy could obtain multiple specimens in one pass, which meant that trauma to the breast was minimised, and presumably accounted for pain alleviation. Also the track from the skin to the lesion could be maintained by the coaxial needle making biopsy needle passage through the breast much easier. Despite the use of a smaller-bore hypodermic needle, FNA is more painful, due to the to-and-fro action exerted through the skin and the lesion during each pass.

Our study was of small scale in terms of sample size and therefore its statistical power was limited. Moreover, the lack of information on patient background characteristics and lack of randomisation could be confounding factors. We, however, did use objective criteria for the diagnostic rate assessment and the fact that a single operator performed all procedures reduced the possibility of investigator bias. Also, as the patients were blinded to the core biopsy procedures, there was no recall bias. Based on our findings, and together with study results from other parts of the world, we advocate a larger-scale randomised control trial to evaluate these breast biopsy techniques.

**Conclusion**

Modified coaxial technique under USG guidance is not widely utilised in Hong Kong. Given the above-mentioned advantages, it could be considered for adoption into department or individual protocols, as multiple specimens can be obtained via one skin passage, and the diagnostic rate is as good as traditional core biopsy.

**References**