

Stereotactic Biopsy of Thin Breasts: a Previously Unfeasible Task

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ABSTRACT

Objective: *To illustrate a new standard on how an Air-Gap Technique could be practically adopted for stereotactic-guided core biopsy on thin Asian breasts (using a homemade foam board), which was not a previously feasible task.*

Methods: *This prospective study was carried out at The Breast Centre of Kwong Wah Hospital, Hong Kong for women presenting between 1 July 2009 and 30 June 2010. All women scheduled for prone-table stereotactic core biopsy (Lorad Co, Danbury [CT], US) targeting breast microcalcifications in compressed breasts of thickness <30 mm and negative or marginal calculated stroke margins identified by short-throw biopsy needles (14G, 14-mm stroke margin, Pro-Mag 1.4; MD-Tech Inc., Gainesville, US) were recruited. An Air-Gap Technique was used for these women. It entailed a homemade foam board (12.5 mm thick), with an aperture corresponding to that on the front compression paddle, inserted between the breast and the posterior compression plate so as to allow bulging and mild mobility at the far side of the breast. The main outcome measure was the success rate in breast microcalcification retrieval; the presence of a biopsy needle puncture wound at the back of the breast was also analysed.*

Results: *During the study period, six Chinese women had breast biopsies performed with our Air-Gap Technique. Their original compressed breast thickness values ranged from 13.4 mm to 28.4 mm and after foam board insertion the thickness increased up to 43.2 mm. Before foam board insertion, the shortest stroke margin in these cases was about 5 mm. A 14G short-throw biopsy needle was used in all instances. All the cases showed calcification in specimen radiographs, while none had puncture wounds over the skin on the far side.*

Conclusion: *In the past, stereotactic core biopsy on thin breasts with thickness of less than 3 cm (not uncommon in Asian women) was regarded as unfeasible. The literature did suggest several manoeuvres (more needle pullback before firing, peripheral pressure on the breast forcing more tissue inside the front compression paddle aperture, skin hook used to pull the lesion and the adjacent tissue towards the front, and injection of generous amount of local anaesthetics to increase breast thickness) to accomplish this task. However, the results are generally unsatisfactory, regardless of the manoeuvres used whether singly or in combination. Better outcomes may be obtained using the lateral arm attachment of certain machines such as the prone biopsy table by Fischer Imaging (Denver [CO], US). Under our existing biopsy machine without a lateral arm, our modified homemade Air-Gap Technique has been shown to be safe and effective for biopsy of lesions previously deemed not feasible due to thinness of the breast. This technique is likely to be particularly helpful for achieving early diagnoses without unnecessary uncertainty in Asian women, many of whom have thin breasts.*

Key Words: *Biopsy, needle; Breast neoplasms; Mammography; Stereotaxic techniques*

偏薄乳房立體定向活檢：以往不可行的任務

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目的：以往替乳房偏薄的亞洲婦女進行立體定向穿刺切片檢查並不可行。本研究描述一種利用自製泡沫板作空氣間隔法（Air-Gap Technique）的可行性。

方法：本前瞻性研究於2009年7月1日至2010年6月30日期間在廣華醫院的乳房中心進行。對象為乳房壓後厚度少於30毫米，及經短距活檢針（14G, 14-mm stroke margin, Pro-Mag 1.4; MD-Tech Inc., Gainesville, US）確認stroke margin為負數或呈邊際值的，同時已預約進行俯臥式乳房立體定位活組織穿刺切片檢查（Lorad Co, Danbury [CT], US）以檢查乳腺鈣化的病人。我們替病人進行空氣間隔法作活檢。方法是利用一塊自製泡沫板，厚度為12.5毫米，中間有一個與前壓迫板相對應的孔。把泡沫板夾在乳房與後壓迫板中間來讓乳房遠側有鼓起及少量活動性。主要結果測量為找出乳腺鈣化的成功率，並檢視病人乳腺遠側是否遺留活檢穿刺針傷口。

結果：研究期間共有六位華籍婦女經空氣間隔法接受乳腺活檢。病人原來的乳房壓後厚度介乎13.4毫米至28.4毫米之間，加入泡沫板後，厚度最多增加至43.2毫米。未加入泡沫板前，最短的stroke margin約為5毫米。所有病例均用14號短距活檢針。所有病變標本在放射線影像中呈乳腺鈣化，且未發現在乳腺遠側遺留穿刺針傷口。

結論：以往為乳房壓後厚度少於30毫米（亞洲婦女中並不少見）的病人進行立體定向穿刺切片被認為是不可行的。文獻中提及數種為乳房偏薄的病人進行活檢的方法，包括發射前把穿刺針再進一步往後拉、在乳房周圍加壓令更多組織推入前壓迫板孔、利用皮膚鉤把病灶及旁邊組織拉向前、注入較多麻醉劑來增加乳房厚度。可是，即使採取以上一項甚至同時多項的方法，效果並不理想。使用某些儀器的橫臂附件例如Fischer Imaging（Denver [CO], US）的俯臥式活檢台可能會有更佳效果。本研究證明在用無橫臂附件的活檢儀的條件下使用改良自製泡沫板作空氣間隔法是安全的，而且對於乳房偏薄而不能進行常規活檢的病人是有效的。這種方法能夠為乳房偏薄的亞洲婦女盡早作出診斷，以免導致病人不必要的憂慮。