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• 中文摘要	<p>利用口腔超音波研究舌前推異常功能與前牙開咬之相互關係：前牙開咬是一種常見的齒顎顱顏異常，然而對其形成之病因目前仍有極大的爭論，有些學者認為舌前推(Tongue thrust)乃是造成前牙開咬(Anterior open bite)的原因；而另一派學者則認為前牙開咬才是造成舌前推的原因。到底誰是因？誰是果？目前仍無定論，主要原因是過去沒有適當的研究技術來對足夠的患者進行這方面的研究。過去使用的研究技術，如動態 X 光、磁氣測量及肌電圖等，應用在研究舌運動方面有不少的缺點。超音波則為一摩登的方法，它有操作簡單、可顯示真時間動態二度平面圖像及沒有生物傷害性之優點，再加上近來已有口腔超音波之防震測量技術的發展，可對舌運動進行定量與定性的測量，因此可提供許多舌部功能的訊息。本研究之目的即為使用比超音波測量技術，將齒顎正常的人模擬成開咬之形態，觀察其舌運動功能是否同樣因而改變，藉以增加對開咬齒顎顏面畸形之病因的瞭解，提供有關開咬病因長久的爭論一個客觀的解答。在比較所有 30 位人工開咬之實驗學生中，發現舌部的 Rest position 位置，正常組與開咬組有明顯差異，開咬組比正常組低 2.62mm ±0.71mm (p<0.001)。然而口內觀察結果，卻發現到開咬組的舌尖已向上移至下顎門牙上端，而約略呈現舌尖位於上下門齒間之現象。在舌頭吞嚥運動功能之考察方面，正常組與開咬組在 Phase I, IIa 及 IIb 有明顯差異而整個吞嚥時間也有差異(p<0.001)。Phase I, IIa 及 IIb 的吞嚥時間，開咬組比正常組各自長了約 0.11s, 0.21s 及 0.24s，而整個吞嚥時間長則多了 0.54s。開咬組及正常組之吞嚥功能中的振幅比較中，只有 Phase I 及 IIa 發現兩組有明顯的差異(p<0.05)。最大振幅發現在 Phase IIa，而整體振幅雖有增加但未有明顯差別。</p>		

- 英文摘要

Ultrasound Investigation of the Relationship between Tongue Thrust Dysfunction and Anterior Open Bite: Anterior open bite is a common dentofacial deformity in clinical practice. However, the etiology of such deformity is still uncertain and even under great controversy. Rakosi and Trankmann, for example, point out that tongue thrust is the major cause of anterior open bite. On the other hand, Profitt and Graber claimed that tongue thrust results in anterior open bite. Which one holds the truth is similar to the controversy between chicken and egg, the answer is still pending. The major reason why is there is no proper research technique to apply on substantial quantity of open bite patients. The previous techniques, such as Kineradiography, electromagnetic articulography and electromyography have some limitations in the investigation of tongue movement. Ultrasound method is a relative modern technique. It is safe, easy to use, and producing 2-D real-time images. Therefore, ultrasonography is suitable for visualization of tongue dynamics. Recently, a cushion measuring method has been developed for quantitative assessment of tongue function with ultrasound technique. The purpose of this research project is to apply this new ultrasound measuring technique to study the difference between the swallowing pattern before and after correction of anterior open bite. Furthermore, to investigate if the swallowing pattern will change when the bite becomes open. Moreover, to deepen the knowledge about the etiology of anterior open bite and provide an objective answer to the previous controversy. In the research on 30 dental students with artificial open bite the tongue rest position between the normal group and open bite group was found different. The rest position of the open bite was found $2.62\text{mm}\pm 0.71\text{mm}$ lower than the normal group ($p < 0.001$). However, tongue tip was found above the lower incisor edge, which was higher than normal group. In the evaluation of the tongue movement during swallowing, phase I, IIa, IIb were found different between two groups. The total swallowing was found 0.54 sec longer in the open bite group. Only phase I and IIa were found different in the comparison of the range of tongue movement between two groups.