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內文：

I. Introduction

- Residual alveolar ridge(RRR)
- Influence facts on RRR : Functional factors ;Anatomical factors ; Inflammatory factors ; systemic factors
- Xie Q et al. found that the reduction in the residual alveolar ridge of the edentulous mandible was greater than that of the maxilla. In addition, the percentage reduction in the mandible of women was greater than that in men. Saglam found similar results.
- Differences in RRR between dentate and edentulous individuals
- The differences between the denture wearer and non-denture wearing edentulous individuals

II. Materials and methods

- 74 men and 73 women with an age interval of 40–77 divided into three groups. Individuals with a history of hyperparathyroidism, osteoporosis, hypo and hyper-thyroidism, diabetes, chronic renal disease and malignancy of bone were excluded from the study.

Group I: Dentate subjects (control group): consisted of 47 subjects with a mean age of 53.4.; 23 men and 24 women

Inclusion criteria:

- (i) no gross attrition of the occlusal surface or incisal edge of the teeth present and
- (ii) at least 20 teeth present

Group II: Totally edentulous and denture wearers: consisted of 50 subjects with a mean age of 58.9.; 22 men and 28 women

Group III: Totally edentulous and non-denture wearers: consisted of 50 subjects with a mean age of 59.8; 29 men and 21 women

III. Procedures

- Criteria for the selection of panoramic radiograms:
 1. Radiographic images of anatomic landmarks such as the inferior and posterior border of the mandible, the inferior points of **orbit**, and the **zygomatic process**, must be evident.
 2. No gross distortion of images of the maxilla and mandible.
 3. Space between the maxillary and mandibular teeth form an approximately horizontal space(upper and lower ridges were not at contact).
 4. To control the contrast, an aluminium step-wedge was used during the exposure.
- The reference lines and measurement points were marked manually on the panoramic radiographs with a 0.5-mm lead pencil on a standard light box.

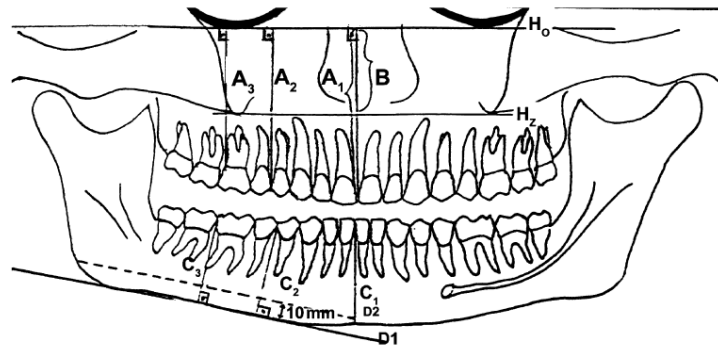


Figure 1 Reference points, measurement lines and points of dentate jaws.

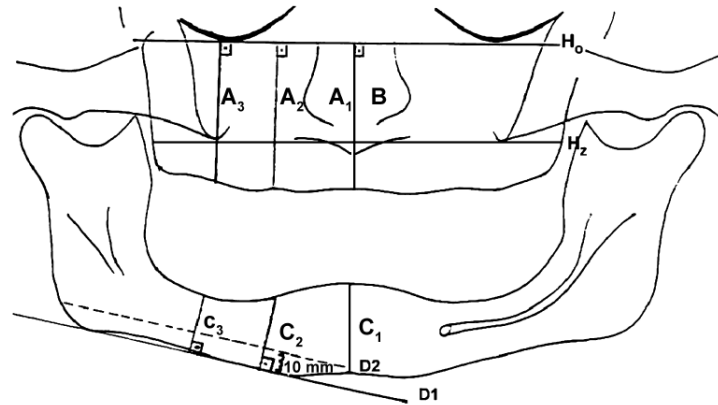


Figure 2 Reference points, measurement lines and points of edentulous jaws.

IV. Results

1. In the upper jaws, the vertical heights of the dentate group were greater than the two edentulous groups ($p < 0.001$).
2. Between the two edentulous groups there were statistically insignificant, but mathematically significant differences existed ($p > 0.05$). The vertical heights of the non-denture wearer group were greater than the denture wearer group.
3. In the lower jaw, results were different from the upper jaw. The vertical height of the dentate jaw was greater than the two edentulous groups. This difference was statistically significant ($p < 0.001$). Contrary to the upper jaw, the vertical height of the non-denture group was greater than the denture wearer group. This difference was also statistically significant ($p < 0.001$).
4. There were significant differences between men and women (in the maxilla $p < 0.005$, in the mandible $p < 0.001$). The height in men was greater than that in women.

Table 1 Vertical heights (mm) of maxillary and mandibular bones in dentate group (I) and denture wearer (II) and non-denture wearer (III) groups according to gender.

Groups	Women				Men				
	Region	n	Mean	Max	Min	n	Mean	Max	Min
I	A ₁	24	45.98 ± 3.64	48.63	45.17	23	47.57 ± 3.55	49.18	45.89
	A ₂	22	44.40 ± 3.39	47.03	42.53	23	46.11 ± 3.21	48.22	43.94
	A ₃	23	43.73 ± 3.02	45.52	41.82	21	44.61 ± 3.80	46.37	42.85
	C ₁	24	40.55 ± 2.66	42.73	38.85	23	42.81 ± 3.61	44.14	40.46
	C ₂	24	38.3 ± 2.36	40.41	35.93	23	41.03 ± 3.5	42.79	38.54
	C ₃	22	32.72 ± 2.46	34.48	30.83	23	35.58 ± 3.77	37.08	33.61
	B ₁	24	23.38 ± 3.47	25.13	22.35	23	23.81 ± 2.86	25.27	22.62
	B ₂	24	23.34 ± 3.50	22.24	19.96	23	23.81 ± 2.83	24.67	22.04
	B ₃	24	23.24 ± 3.48	25.09	22.31	23	23.78 ± 2.88	25.22	22.58
II	A ₁	28	40.19 ± 3.28	41.61	38.76	21	39.90 ± 4.53	41.55	38.26
	A ₂	28	38.18 ± 7.58	40.03	36.33	21	39.90 ± 3.8	42.04	37.76
	A ₃	28	36.39 ± 3.82	37.92	34.87	21	37.10 ± 4.3	38.86	35.34
	C ₁	28	27.09 ± 5.1	28.68	25.50	22	30.58 ± 4.47	32.23	28.54
	C ₂	28	24.05 ± 6.2	25.90	22.20	22	29.07 ± 5.5	30.94	26.68
	C ₃	28	19.71 ± 4.03	21.21	18.21	22	24.07 ± 5.41	25.43	21.96
	B ₁	28	21.11 ± 2.63	22.26	19.97	22	23.47 ± 3.5	24.71	22.07
	B ₂	28	21.10 ± 2.64	22.24	19.96	22	23.43 ± 3.40	24.57	22.04
	B ₃	28	21.12 ± 2.68	22.27	19.98	22	23.43 ± 3.40	24.67	22.02
III	A ₁	21	38.11 ± 3.52	40.29	36.83	29	42.84 ± 4.53	44.24	41.43
	A ₂	20	36.53 ± 3.81	35.77	32.07	29	41.42 ± 5.24	43.24	39.60
	A ₃	20	33.68 ± 3.34	35.77	32.07	29	39.25 ± 5.17	40.75	37.75
	C ₁	21	30.83 ± 3.93	33.31	29.43	29	37.3 ± 5.0	38.87	35.73
	C ₂	20	28.62 ± 5.04	31.21	26.74	29	34.39 ± 5.21	36.20	32.58
	C ₃	21	22.97 ± 3.82	25.24	21.60	29	27.91 ± 4.07	29.40	26.44
	B ₁	21	19.60 ± 2.1	21.22	18.44	29	22.85 ± 3.56	23.97	21.72
	B ₂	21	19.58 ± 2.06	21.20	18.43	29	22.85 ± 3.57	24.67	22.04
	B ₃	21	19.60 ± 2.04	21.22	18.44	29	22.86 ± 3.60	24.00	21.74

V. Discussion

- Wical and Swoope determined the pre-resorption level of the mandible by multiplying the distance between the lower border of the foramen mentale and the lower border of the mandible by three. This method only supplies information about RRR in the foramen mentale region. Xie et al. later developed a method that took into account the other parts of the mandible and maxilla
- For dentate jaws Saglam was unable to find a significant difference between men and women, but found that the height of the mandible was greater in men than in women. In edentulous jaws, the height of the maxilla and mandible was significantly greater in men compared with women. He also stated that the reduction in the residual alveolar ridges of the maxilla and mandible was more pronounced in women than in men.
- The vertical heights of the non-denture users were greater, especially in the mandible, when compared with the denture-wearing group. In the maxilla, the vertical heights of the two edentulous groups were similar.
- The loss of vertical height is four times greater in the anterior region of the jaws than the posterior regions. In addition, the rate of resorption is more rapid in the first year of denture wear and it is known that denture wearing can stimulate or accelerate RRR.
- Campbell²² stated that the ridges of denture wearers were smaller than those of non-denture wearers, and claimed that resorption in the jaws of denture wearers was worse than in the non-denture wearers.
- Milam and Schimitz explained this resorption mechanism using three models: under excessive mechanical stresses, tissues are either destroyed directly or damaged indirectly. They advanced their theory by the addition of the concept of oxidative stresses, in which mechanical stresses generate free radicals that cause

resorption of bone or injury of the TMJ.

- Although the exact adverse affects of gender and age on RRR have not yet been established, the greater rate of RRR within women is attributed to the accelerator effect of oestrogen deficiency on generalised mineral loss from the skeleton during and after menopause.
- The results of a study by Crum and Rooney²⁶ indicated that the use of the mandibular overdenture helped preserve alveolar bone in the mandible. Retention of the teeth in the anterior part of the mandible was advantageous. They suggested that the discrete proprioceptive ability of the teeth under an overdenture acted as a signal against the physiological overload of the system and thus prevented bone resorption.
- Wowern and Gotfredsen, Wright et al., Kordatzis et al. and Wright and Watson in their follow-up studies, compared implant-supported dentures with conventional ones. They all indicated that implant-supported dentures showed a minimal reduction in the residual alveolar ridges and that patients were more comfortable.

VI. Conclusions

- The vertical heights of the dentate group were greater than the denture wearer and non-denture wearer group.
- The vertical heights of the non-denture wearer group were greater than the denture wearer group, especially in the mandible. In the maxilla, there were no significant differences between the vertical heights of non-denture and denture wearer groups. It can be suggested that the maxilla may protect itself since it is wider than mandible, and its composition helps the maxilla to accomplish the forces being applied on it. Also, factors such as the denturewearing period, the materials used (base, artificial teeth, etc.), impression techniques, and the planning of the dentures have to be considered as important.
- Reductions in the RRR in women are more pronounced than men especially in those of advanced age. This situation could be explained by post-menopausal changes and by the fact that conditions such as osteoporosis affect women more than men.

題號	題目
1	下列何者非理想的假牙基底材(denture base materials)之條件? (A) 密度高 (B) 好的溫度傳導性 (C) 美觀性佳 (D) 不易被溶解
答案(A)	出處：prosthodontic treatment for edentulous patients. Ch12.table12-2
題號	題目
2	關於全口假牙，何者為非? (A) 自然牙可承受的力量約為全口假牙的5~6倍 (B) 覆蓋式全口義齒(overdenture)屬於tooth support denture (C) 一般來說，全口義齒有相對較高的垂直高度時(vertical dimation)，可讓配戴者的表情看起來較年輕 (D) 齶齒與牙周病是覆蓋式全口義齒(overdenture)配戴者最主要的風險
答案(B)	出處：prosthodontic treatment for edentulous patients.

	Ch.2 Ch10
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