UNIVERSITI SAINS MALAYSIA

LAPORAN AKHIR PROJEK PENYELIDIKAN JANGKA *PENDEK*

FINAL REPORT OF SHORT TERM RESEARCH PROJECT

Sila kemukakan laporan akhir ini melalui Jawatankuasa Penyelidikan di Pusat Pengajian dan Dekan/Pengarah/Ketua Jabatan kepada Pejabat Pelantar Penyelidikan

1. Nama Ketua Penyelidik: Dr Zainul Ahmad Rajion
Name of Research Leader

☐ Profesor Madya/ *Assoc. Prof.* ☑ Dr./ *Dr.* ☐ Encik/Puan/Cik *Mr/Mrs/Ms*

2. Pusat Tanggungjawab (PTJ): School of Dental Sciences USM
School/Department

3. Nama Penyelidik Bersama: 1. Dr Wan Abdul Rahman Wan Harun
2. Izhar Abd.Aziz

4. Tajuk Projek: **A cross sectional 3D evaluation of the morphology of the hyoid bone**
Title of Project

5. Ringkasan Penilaian/*Summary of Assessment*:	Tidak Mencukupi *Inadequate* 1	2	Boleh Diterima *Acceptable* 3	Sangat Baik *Very Good* 4	5
i) Pencapaian objektif projek: *Achievement of project objectives*	☐	☐	☑	☐	☐
ii) Kualiti output: *Quality of outputs*	☐	☐	☑	☐	☐
iii) Kualiti impak: *Quality of impacts*	☐	☐	☑	☐	☐
iv) Pemindahan teknologi/potensi pengkomersialan: *Technology transfer/commercialization potential*	☐	☐	☐	☐	☐
v) Kualiti dan usahasama : *Quality and intensity of collaboration*	☐	☐	☑	☐	☐
vi) Penilaian kepentingan secara keseluruhan: *Overall assessment of benefits*	☐	☐	☑	☐	☐

6. **Abstrak Penyelidikan**
(Perlu disediakan di antara 100 - 200 perkataan di dalam **Bahasa Malaysia dan juga Bahasa Inggeris**. Abstrak ini akan dimuatkan dalam Laporan Tahunan Bahagian Penyelidikan & Inovasi sebagai satu cara untuk menyampaikan dapatan projek tuan/puan kepada pihak Universiti & masyarakat luar).

Abstract of Research
(An abstract of between 100 and 200 words must be prepared in Bahasa Malaysia and in English).
This abstract will be included in the Annual Report of the Research and Innovation Section at a later date as a means of presenting the project findings of the researcher/s to the University and the community at large)

Hyoid bone is a unique structure which lies between the mandible and thyroid cartilage. It is a U-shaped bone which is suspended only by the attachment of anterior neck muscles. Functionally it serves in maintaining the airway, swallowing and preventing regurgitation. The hyoid bone arise from the 2nd and 3rd brachial arch and the ossification process commences during intrauterine life and ceases only after reaching puberty (Koebke, 1978).

Problems with these vital functions may be associated with the anatomical position of the hyoid bone in relation to the craniofacial structures and head posture (Tallgren and Solow, 1987; Athanasiou *et al.*,1991). Study has shown that at 23-25 weeks in utero, the fetal hyoid and larynx are situated high relative to the cervical vertebra (Bosma, 1986). The hyo-laryngeal complex descends in relative to the face and cranial base but not relative to the vertebral column during postnatal growth (Bosma, 1986). In neonates, the hyoid bone lies opposite the junction between C2 and C3, just inferior to the mandible (Bosma, 1986) Except for the hyoid bone, the laryngeal cartilaginous structures such as the thyroid, cricoid and arytenoids are not ossified until late teens, as a result they are featureless in a plain radiograph (Hudgins *et al.*,1997). lateral cephalometry has significant limitations, such as superimposition of structures, difficulty identifying landmarks and poor visualization of 3D structures (Maue-Dickson, 1979; Moyers and Bookstein, 1979; Cohen, 1984; Richstmeier and Cheverud, 1986; Fisher *et al.*, 1999; Singh *et al.*, 2004).

Previous studies on the level of the hyoid bone applied conventional radiographic techniques such as lateral cephalometric which has a lot of limitation, such as higher magnification and therefore is more error prone. As a result, this study was undertaken to look into the level of hyoid bone in relation to cervical spine using MIMICS (Materialise Interactive Medical Image Control System) software (Materialise N.V., Haasrode, Belgium). Computerized Tomography (CT) scan of patients are analyzed using MIMICS software. The level of hyoid bone and epiglottis is determined in relation to the cervical spine. A total of 51 subjects age from 0 to 56 years old were used in this study. Level of hyoid bone and epiglottis are found to be in a descending pattern as the age increases and reaches it adult level at around the age of 13 years old. As a result the level of hyoid bone and epiglottis differs in children and adults.

Bahasa Malaysia	*Bahasa Inggeris*
Hyoid bone	Hyoid bone
Epiglottis	Epiglottis
Cervical spine	Cervical spine
CT Scan	CT Scan