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Development of a Vertically Adjustable Electrically-Powered Forensic Dental Examination Table

Introduction

It is well-known that dental evidence found at the scene of disasters or crimes can be particularly effective as a method of personal identification [1-5]. However, that being the case, a special table for dental identification still does not exist, and the examination of the dental findings for post-mortem identification routinely takes place on dissecting tables, experiment stands, desks etc. Furthermore, this is often done on the ground, the floor, or in a simple coffin because of lack of adequate facilities such as the above mentioned tables [6,7].

Examination of dental findings is comprised of three different steps: taking intra-oral photos, taking X-ray photos, and writing the Dental Chart [6-9]. Since the suitable height required for each of these steps is different, it is understandable why these examinations must not take place on a table, the height of which cannot be adjusted, or on the ground or floor.

Therefore, we have designed a special table for the examination of dental findings, that is, Vertically Adjustable Electrically-powered Forensic Odontological Table, resulting from collaboration with related industries.
1. Materials and Methods

The table’s top board was equipped with body lays that were made of reinforced resin, a body made of steel, and castor. We have developed this table based on electric nursing bed technology, and it is adjustable from a height of 200 to 1015 mm without a having the motor change to a hire gear, and it can withstand a load of 130 kg. The table was designed to be as compact and as light as possible taking into consideration portability, work efficiency, and the prevention of infection. In addition, the head position components are angle-adjustable and removable from the main body of the table if desired (Fig. 1).

2. Results and Discussion

As for the dimensions of the examination table, the length of the top board in the newly made inquest table is 1,750 mm, its width is 558 mm, and lastly, its area is about half the width of that of a general dissecting table. The entire weight is about 90 kg, and this is less than half of the dissecting table. As mentioned previously, the height can be adjusted from 200 mm to 1015 mm, and this is a new function, one not provided for in past dissecting tables. This table can be operated conveniently enough on a domestic power supply,
and even if it has to be used outdoors it can be operated easily enough with
the marketed compact dynamo.

This table reduces physical strain on the examiner, and improves inspection
efficiency and accuracy due to the following advantages:

(1) Adjustable height enables improved comfort by taking into consideration
the examiner’s height for each type of work, such as taking intra-oral photos
(Fig. 2a), x-ray photos (Fig. 2b), and writing up dental charts (Fig. 2c). This
new table allows the best posture necessary for each examiner by easily
adjustment to a comfortable height.

(2) The detachable head component makes taking x-ray photos easy without
having to rearrange the position of remains on the table. Up until now, X-ray
irradiation from the bottom to top was difficult: however, it has become
easier to locate the irradiation equipment as shown in figure 3, because the
head component can be separated from the top board. Furthermore, in the
case of using lying type panoramic X-ray equipment [10], it is easy with
remains enshrined on the table (Fig. 4).

(3) During the examination, it is necessary to pay attention to infection from
remains. Because a dissecting table is too wide, the examiner’s clothes touch
the table easily. In this new table, contamination of an examiner’s clothes etc.
is prevented by virtue of a minimally sized top board (Fig. 5).

For the above-mentioned reasons, this table is very useful for personal
dental identification, and we hope that its use and popularity will grow.
Portability and cost performance are enhanced by miniaturization, and, most
importantly, the integrity and dignity of the remains are improved and
preserved.
Fig. 1. Vertically Adjustable Electrically-Powered Forensic Dental Examination Table

Fig. 2. Compact and light

Fig. 3. Adjustable height
   a: taking intra-oral photos  b: taking x-ray photos  c: writing up dental charts

Fig. 4. Detachable head component
   Easy positioning of irradiation equipment

Fig. 5: Taking X-ray photos by means of lying type panoramic X-ray equipment

Fig. 6: Minimally sized top board.
   Prevention of contamination of examiner's clothes or personal effects