THE USE OF IMAGES OF PALPATORY ANATOMY REFERENCE POINTS TO PROVIDE MANUAL THERAPY GUIDANCE

Ana Paula Antunes Ferreira[1], Luciana Cid Póvoa[1], José Fernando Cardona Zanier[2], Luiz Flávio Skinner[2], Bernardo Tessarollo [2]

1- IBO- Instituto Brasileiro de Osteopatia – RJ (Brazilian Institute of Osteopathy)

2- Serviço de Radiologia e Diagnóstico por Imagem do Hospital Universitário Pedro Ernesto – Universidade do Estado do Rio de Janeiro (Department of Radiology and Diagnostic Imaging – Pedro Ernesto University Hospital – Rio de Janeiro State University – UERJ)

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Palpatory anatomy is fundamental in osteopathy training programs.

Palpatory anatomy is a core subject in the curriculum of educational institutions and it qualifies the professionals to diagnosis and adequately apply Osteopathic Manipulative Treatment (OMT).

It is extremely important to demonstrate the reliability of palpatory references.

A strong academic background in the field will provide the professional with proper and necessary skills to implement treatment.

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Our research was born from one simple question:

Do we palpate the exact structure we intend to?

Are the existing, published and accepted anatomical palpatory references indeed accurate?

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The purpose of this study was to demonstrate the correspondence between anatomic structures in vivo and references described in palpatory anatomy textbooks and articles used as bibliographical references adopted in osteopathic training.

Pilot Study

It is a pilot study whose main objective was to demonstrate that it is possible to use anatomic lead markers on patients undergoing previously scheduled medical CT scans **without any detrimental effects to the patients** in relation to an increase in radiation or **any compromise in the final evaluation of the given exam**, and, at the same **time verify the accuracy of landmarks palpated.**

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Most of the published articles referring to palpatory anatomy have been produced based on simple x-ray.

In Brazil, the ethics committee for research production with humans does not allow the use of radiological methods, which emit radiation, for the sole purpose of verifying a hypothesis.

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- In the case studied, the patient who was submitted to the CT scan had a prior medical request for the exam.
- The patient had a facial sinus disease as well as a history of urinary lithiasis.
- Two osteopaths and one radiologist were involved in this research. Two other radiologists participated as collaborators.

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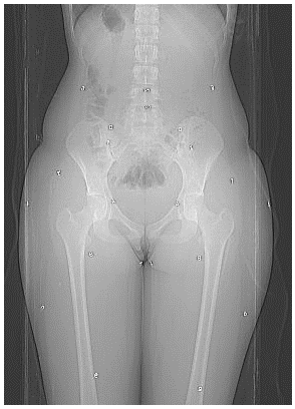
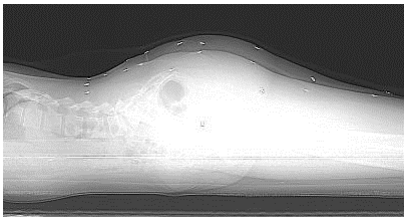
- The patient's body was divided into right and left sides with each osteopath pinpointing 23 anatomical landmarks on their respective side.
- Lead markers were attached with adhesive tape to the patient's skin on the reference points indicated in the surveyed books and a CT-scan was performed.

Two osteopaths set lead markers on the points indicated in the books which correspond to 23 anatomic structures





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It was a blind study as the radiologists had no previous knowledge of the marked structures.

The Helical CT scan is utilized in order to define normal and abnormal structure in the body and/or assist in procedures by helping to accurately guide the placement of instruments or treatments.

Materials and Methods

- Two osteopaths set markers on a 21 year old patient on the points indicated in the books which correspond to the following anatomic structures:

1 – L4's spinous process;
2 – L 5's spinous process;
3 – postero superior iliac spine PSIS, left and right;
4 – postero inferior iliac spine PIIS, left and right;
5 – quadratus lumborum muscle, left and right;
6 – piriformis muscle, left and right;

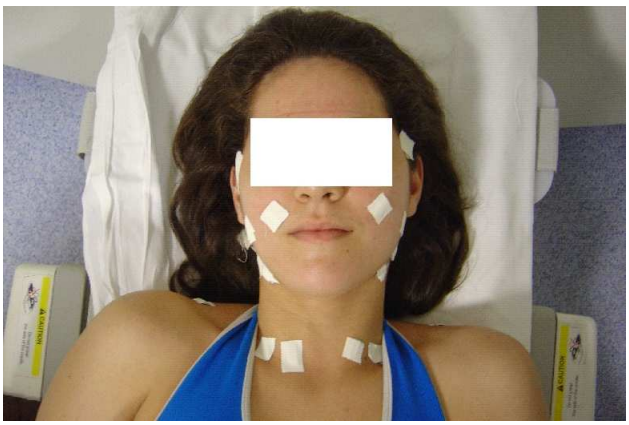
Materials and Methods

7 – inferior lateral angle of sacrum ILA, left and right
8 – greater trochanter, left and right;
9 – ischial tuberosity, left and right;
10 –sacrotuberal ligament, left and right;
11 – inferior edge of gluteus maximus muscle, left and right;
12 – emergence of the ischiactic nerve, left and right;
13 – superior trapezius muscle, left and right;
14 – proximal sternocleidomastoideus muscle, left and right;
15 – digastric muscle, left and right;
16 – medial pterygoid muscle, left and right;
17 – masseter muscle, left and right;

Materials and Methods

18 – temporal muscle, left and right;
19 – zygomaticus muscle, left and right;
20 – C2's spinous process, left and right;
21 – mastoid process, left and right;
22 – sternal head of the sternocleidomastoid muscle, left and right;
23 – clavicular head of the sternocleidomastoid muscle, left and right.

Materials and Methods



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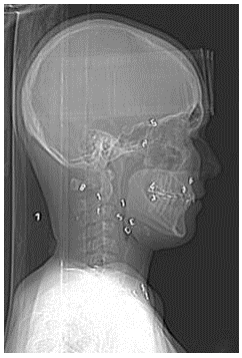
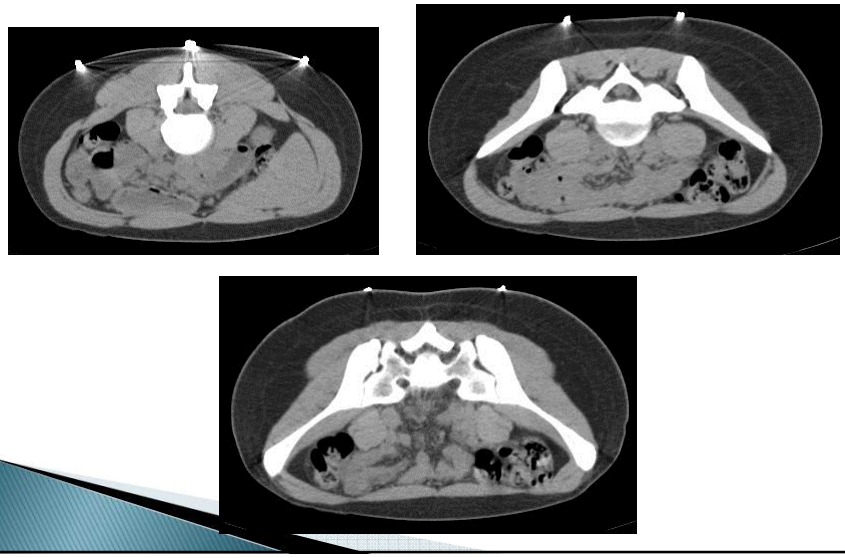


The CT-scan was performed on a GE HiSpeed scanner at Pedro Ernesto *University Hospital* – Rio de Janeiro State University – UERJ, to ascertain correlation between palpated points and CT images

0,5 mm thickness axial images obtained from helical CT scan from the cephalic to pelvic region

The CT images obtained were 5 mm thick axial images from helical CT scan from the cephalic to pelvic region



The data were analyzed by a radiologist and confirmed by two other radiologists in regard to correlation between palpated points and CT images

Correspondence between palpation and CT images was confirmed in the following points: 1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 22 and 23.

Points 4, 7, 16 and 21 did not correspond to the CT images.

On point 20, the marker 's adhesive tape detached from the patient's skin.

Results

1 – L4's spinous process;
2 – L 5's spinous process;
3 – superior posterior iliac spine, left and right;
4 – inferior posterior iliac spine PIIS, left and right;
5 – quadratus lumborum muscle, left and right;
6 – piriformis muscle, left and right;
7 – inferior lateral angle of sacrum ILA, left and right;
8 – trochanter major, left and right;
9 – ischial tuberosity, left and right;
10 – sacrotuberal ligament, left and right;
11 – inferior edge of gluteus maximus muscle, left and right;
12 – emergence of the ischiactic nerve, left and right;
13 – superior trapezius muscle, left and right;

Results

14 – proximal sternocleidomastoid muscle, left and right;
15 – digastric muscle, left and right;
16 – medial pterygoid muscle, left and right;
17 – masseter muscle, left and right;
18 – temporal muscle, left and right;
19 – zygomaticus muscle, left and right;
20 – C2's spinous process, left and right;
21 – mastoid process, left and right;
22 – sternal head of the sternocleidomastoid muscle, left and right;
23 – clavicular head of the sternocleidomastoid muscle, left and right.

Results

- The deepest structures are more difficult to be evaluated.
- Correspondence between palpatory and radiologic anatomy was 81,8% of the assessed points.

Results

- We believe the error in the marking of point 21 (mastoid process) was due to the difficulty in setting the marker because of the presence of hair.
- We had difficulty in marking point 20 (C2) as we needed to place the markers on the lateral aspect of the spinous process and used a considerable amount of adhesive tape, which due to the smallness of the structure overlapped and became loose.

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- The Project is made up of a study of 50 images from each region (cervical/pelvic). Initially, the research will involve the original researchers however, in the future, osteopaths with varying levels of experience will be involved in the research.
- The radiology department at Pedro Ernesto Hospital (public) is headed by Dr. Zanier, PhD in radiology, professor at UERJ, with 35 years of experience.
- 40 to 50 CT scans are performed daily.

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To make the Project more efficient, it is necessary:

- to reduce the numbers of references points marked per region to decrease the time taken to apply markers;
- to improve the placement of lead markers by using high quality tape and cleaning adequately the skin region.

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- Although this rate of correspondence is high, a revision of palpatory anatomy is still indispensable to increase the effectiveness of osteopathic methods.

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Thank you!

- osteoferreira@terra.com.br