

Gross Anatomy of Bifid Xiphoid Process

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INTRODUCTION

- Xiphoid process is the ossified extension of the lower sternum in the chest midline of human adults, whose size can provide a prediction of the individual's sex.^{1,2,3}
- Natural variance in this process results in the less common **bifurcated** morphology.^{1,2}
- Understanding xiphoid variations helps clinically to rule abnormal masses on radiographs, identify appropriate landmarks during invasive procedures, and possible trauma from chest interventions such as CPR.⁴

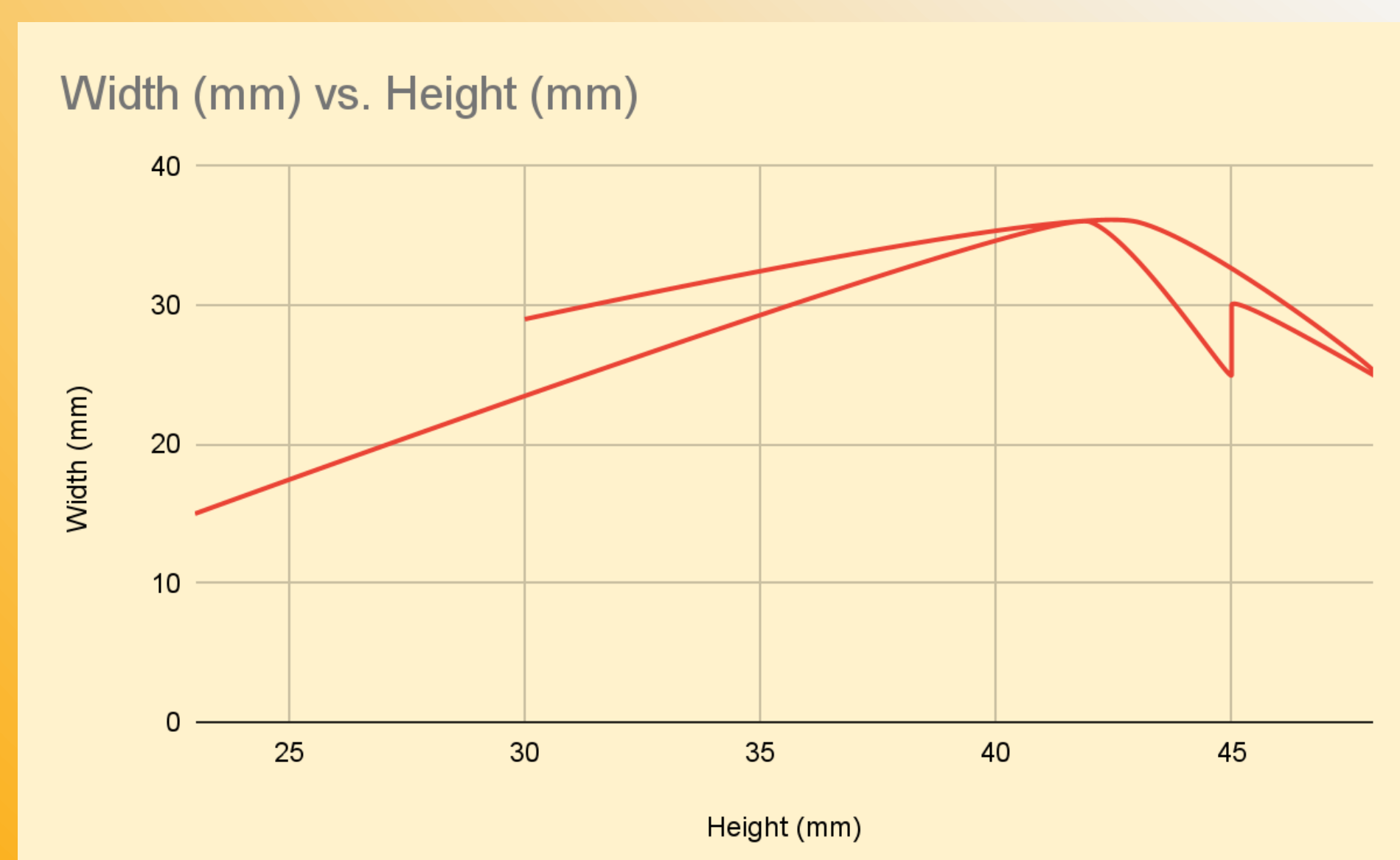
OBJECTIVE

- The primary objective of this study was to explore the distribution of the **bifid** variance.
- In a secondary objective, we aimed to compare bifurcated Xiphoid processes to other possible variations, as well as the difference in prevalence of bifid among sexes.
- Possible limitations of the study are unequal distribution of incidents based on geographical locations of donors and removal of xiphoid processes during class dissections.

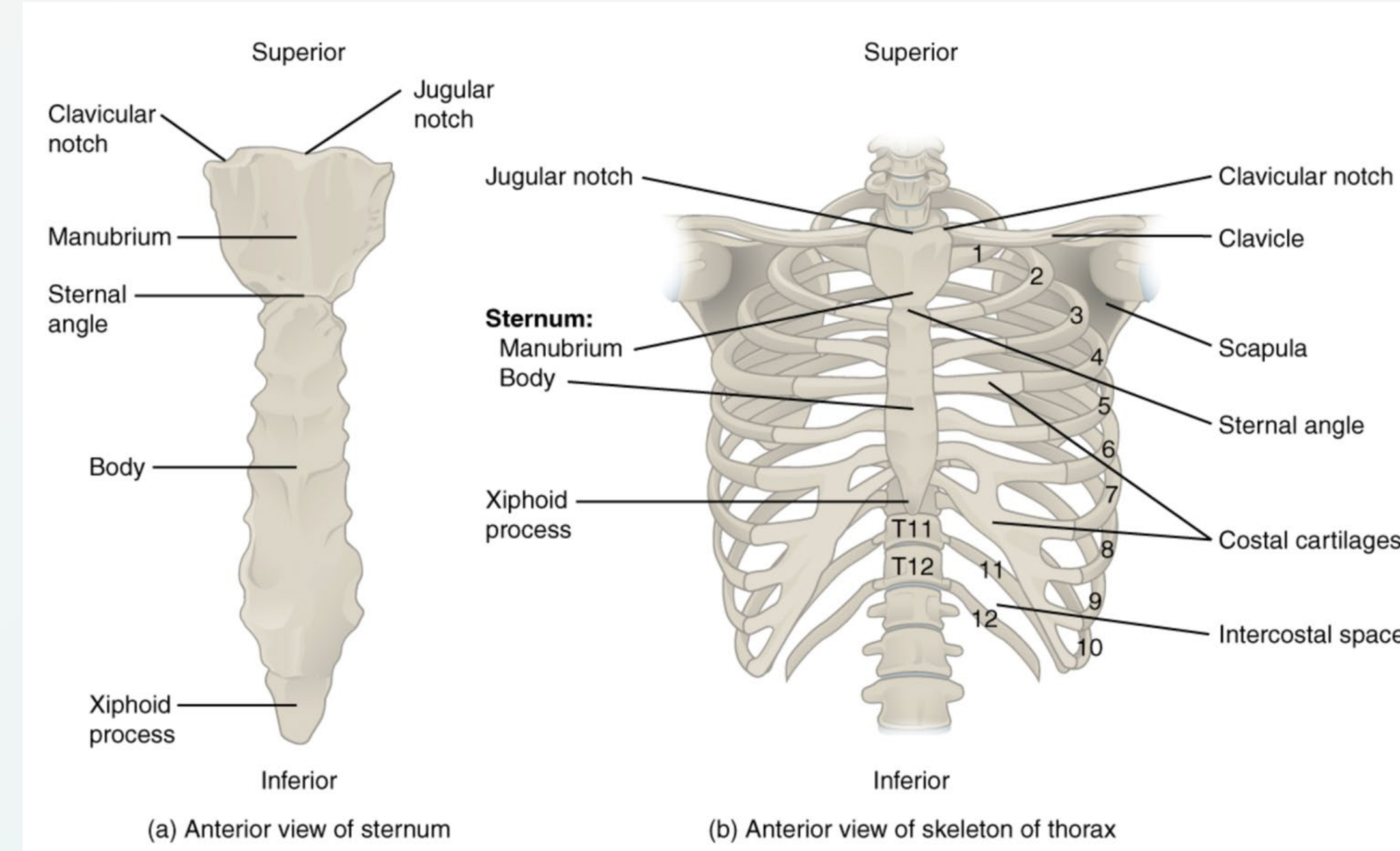
METHODS

- A case study was designed to explore the distribution of bifid xiphoid variance in a sample of cadavers (n=30)* at a large medical education institution.
- The dependent variable was binarized (bifid or normal) and univariate analyses were performed.
- The analysis accounted for the primary research objective: the presence of bifurcation measured in each cadaver.
- In addition, analysis further investigated the sex, measurements of height and width of Xiphoid processes.
- Calculated statistics were conducted using Microsoft Excel, as well as the generated graphics.

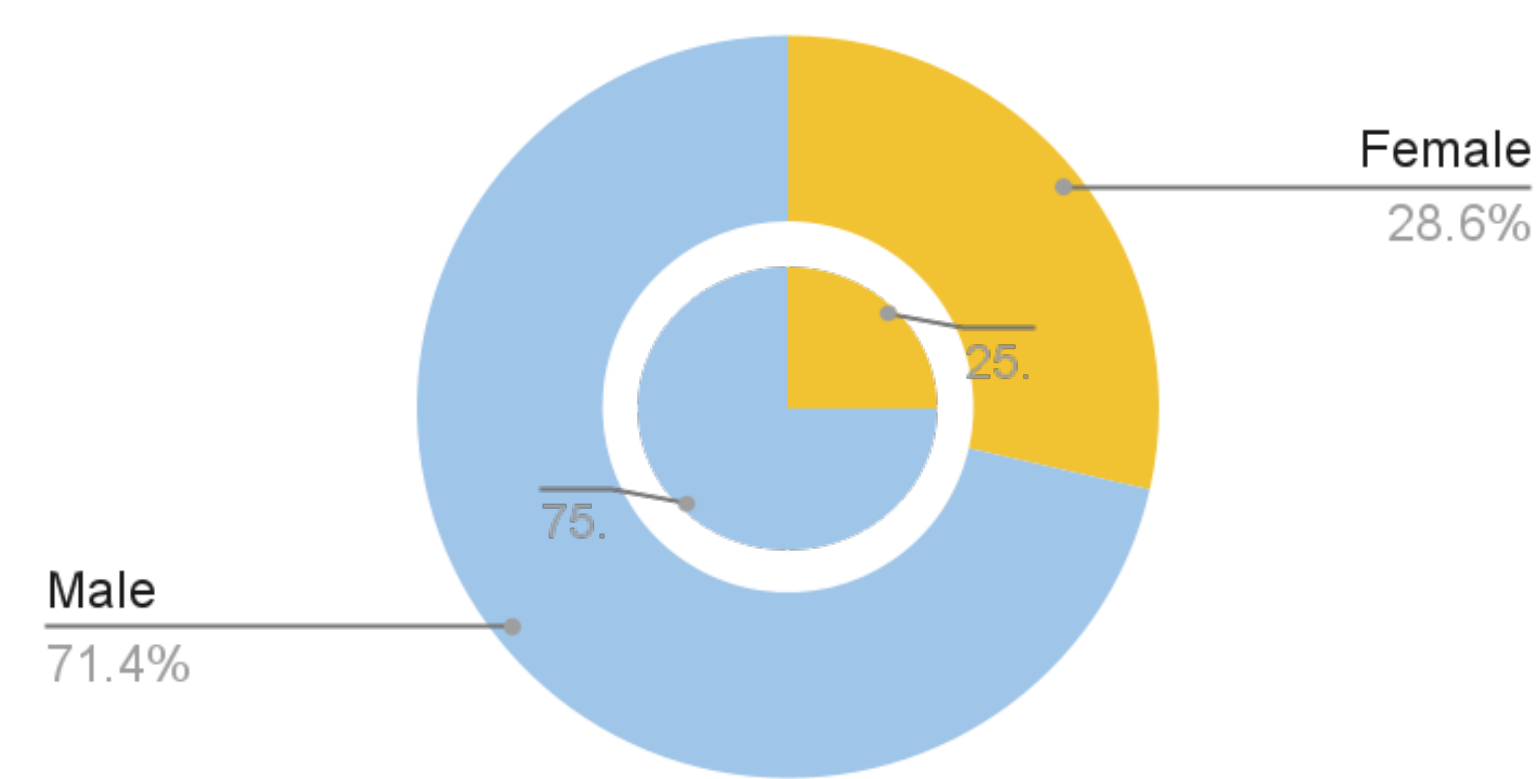
*In progress due to COVID restrictions.



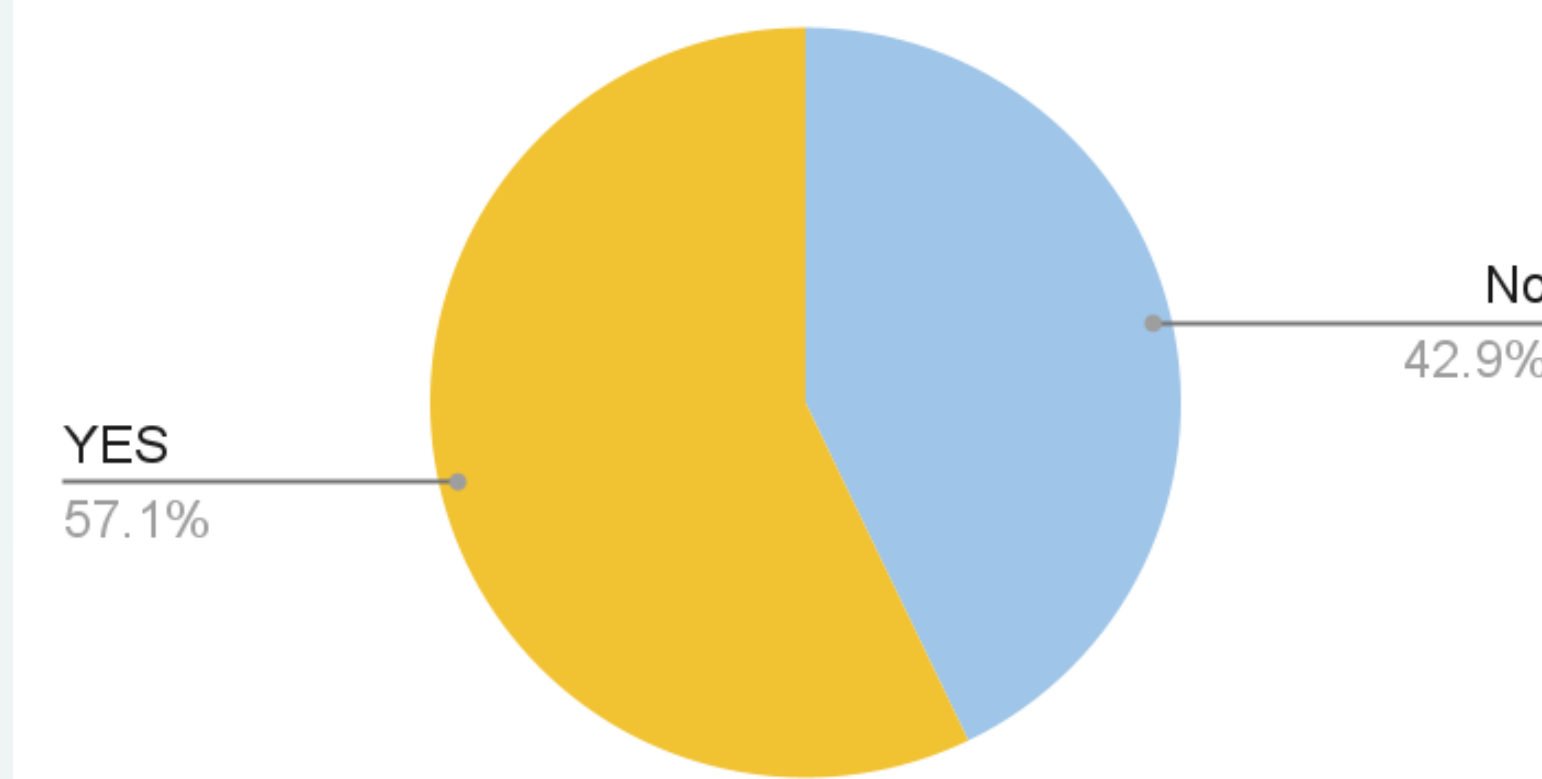
DISCUSSION



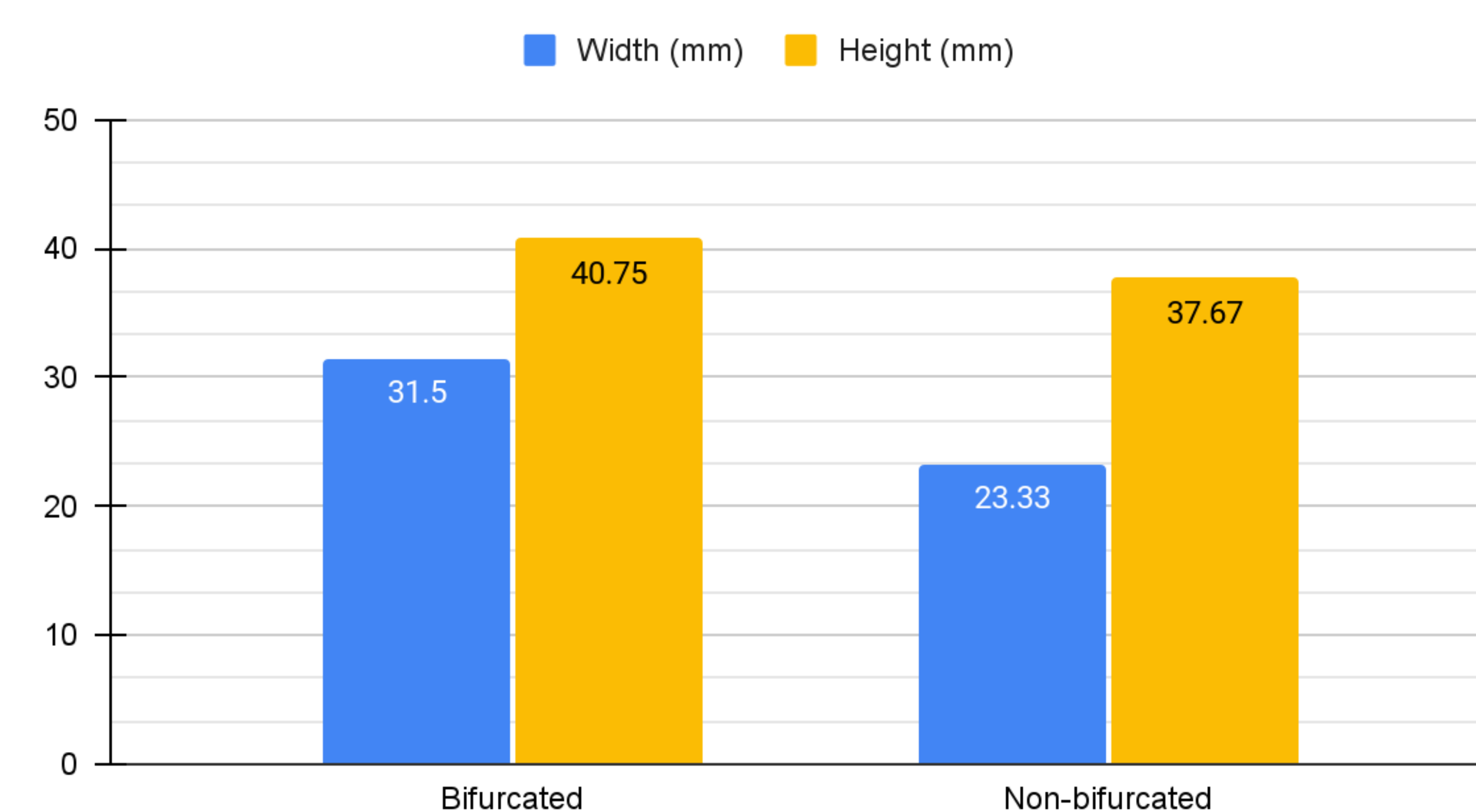
Count of Gender



Count of Bifurcation



Width (mm) and Height (mm)



RESULTS

- Significant differences in presentation were observed between the measurements of the bifid and the normal variants.
- The bifid variants were typically wider and taller, averaging 31.5 mm and 40.75 mm in width and height, respectively, than the expected variant, averaging 23.33 mm in width and 37.67 mm in height, except for one outlier depicted in the line graph.
- The sample had an abnormally high distribution of bifid processes; in this sample 57.1% of cadavers had a bifid, while in previous studies the presence of bifid variants averaged to be between 25%-27.34%.^{5,6,7}
- Additionally, we provide a review of the implications of this bony landmark for mediastinal pressure and surgeries performed on the thoracic and abdominal areas.⁴
- Data is reported using textual and diagrammatic visuals.

CONCLUSION

- This case study demonstrates a significant variation of the Xiphoid process, aiding clinicians in performing more accurate imaging and diagnosis.
- Our current sample population demonstrates a high incidence of variations. A larger sample is needed to draw a more accurate conclusion.
- Future research should consider the physiological effects and clinical significance of this process.
- Future research should consider differences in xiphoid variation among sex and ethnic backgrounds.

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