

Peer Review File

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Reviewer A

Comment 1: I have concerns about the methodology and research design. There is not a good explanation as to how or why the distance from the uvula in relation to uvula length or width would affect postop pain. It is actually more likely that endophytic tonsils that require more dissection would have more pain postoperatively than exophytic tonsils that dissect out relatively easily.

Reply 1: Thank you very much for your constructive comments. In this study, we only consider the impact of the distance from the uvula in relation to uvula length or width on postoperative pain. In the future, we will conduct in-depth research, taking into account the impact of endophytic tonsil on post-tonsillectomy pain.

Secondly, after extensive literature review, our team did not find any effects of endophytic tonsil on postoperative pain. We searched for only one article (which is about tonsil cancer) on Pubmed using the keyword "endocytosis tonsils", but this also gave us the opportunity to conduct in-depth research. Thank you again for your valuable suggestion.

Finally, we added a sentence in the "limitations" section of the discussion section: [In addition, this study did not consider the impact of endophytic tonsils on post tonsillectomy pain, and further in-depth research will be conducted in this area in the future.](#)

Changes in the text 1: Page11, line269-271. we added a sentence in the "limitations" section of the discussion section: [In addition, this study did not consider the impact of endophytic tonsils on post tonsillectomy pain, and further in-depth research will be conducted in this area in the future.](#)

Comment 2: The photograph technique is not described and depending on how widely the patient opens their mouth the tonsils will move out laterally influencing these measurements.

Reply 2: Thank you for your valuable comment. All patients undergo routine ear, nose, and throat examinations. Each consultation room and ward in our hospital is equipped with a high-definition endoscopic image acquisition system, which is used for photo taking. All patients are seated, trying to open their mouth and gently press the tongue with a tongue depressor, and making an "a" sound as much as possible to ensure that the tonsil photos taken each time are as consistent as possible.

Changes in the text 2: Page6, line133-136. We have make change in the "*Measurement parameters*" in "Method" section: [All included patients took a sitting position, trying to open their mouth and gently press the tongue with a tongue depressor, and making an "\[a:\]" sound as much as possible to ensure that the tonsil photos taken each time are as consistent as possible. The endoscopy system was used to collect the pictures.](#)

Comment 3: The authors mention measuring pain only for 3 days while postop tonsil pain can last up to 12 days, also they dont mention whether any non-narcotic analgesics were used and whether local anesthesia was used at the time of surgery.

Reply 3: Thank you very much for your constructive comment. Currently, this study only focuses on and studies postoperative pain during the patient's hospitalization period (3 days after surgery). We will further investigate postoperative pain up to 12 days in future studies. During the operation, the anesthesiologist will give one flurbiprofen axetil for every patients. After the operation, if the patient has no pain that is intolerable, he will not give analgesic routinely. No local anesthetic was used during the surgery.

Changes in the text 3: Page7, line156-159. We have make change in the “*Surgical treatment*” in “Method” section: [During the operation, the anesthesiologist will give one flurbiprofen axetil for every patients. After the operation, if the patient has no pain that is intolerable, he will not give analgesic routinely. No local anesthetic was used during the surgery.](#)

Comment 4: The AI prediction model needs more explanation as to how the validation and training sets were determined, how many repeat measurements per patient were used for the calculations and how did they differ each time. also how often were pain measurements recorded and was it only a yes/no or an actual pain scale?

Reply 4: Thank you for your kind comments. The ratio of the training set to the validation set is 6:4, and all data is randomly divided into a 60% training set and a 40% validation set. The data is randomly allocated using Python software in code form.

Each patient measured 6 tonsil photo parameters, and all patients were seated, trying their best to open their mouth and gently press the tongue with a tongue depressor, and making an "[ɑ:]" sound as much as possible. This way, the photos of the tonsils taken each time will be basically consistent.

There are two types of postoperative tonsil pain measurements, and we have actually recorded both. One is the VAS score, which is measured once a day; The other type is "yes/no", which is mainly used in this study. Patients are asked every day whether their pain is unbearable enough to require the use of painkillers. Once within three days, if the patients report unbearable pain and need to use painkillers, they will be recorded as the "postoperative pain group". Otherwise, they are classified as the "non postoperative pain group".

Change in the text 4: Page7, line168-171. We have make change in the “*Postoperative Pain Assessment*” in “Method” section to further explain this: [In another words, once within three days, if the patients report unbearable pain and need to use painkillers, they will be recorded as the "postoperative pain group \(marked as 1\)". Otherwise, they are classified as the "non postoperative pain group \(marked as 0\)".](#)

Reviewer B

Comment Part 1: Please see comments in attached pdf.

Reply for Comment part 1: We have make changes in the text according to the attached pdf. Thanks very much for your kind suggestions.

Changes in the text for Comment part 1: all the changes were marked as green in the corresponding section in the manuscript.

Here is the details:

Page4, line83-86: **If the patients are suffering with recurrent tonsillitis, adenotonsillar hypertrophy, recurrent peritonsillar abscess, adenotonsillar hypertrophy, sleep disordered breathing, a tonsillectomy may be recommended as a treatment option**

Page4, line96, change “little” to “minimal”

Comments: Is this a validated method of measuring pain? Was the amount of pain relief recorded?

Reply: There are two types of postoperative tonsil pain measurements, and we have actually recorded both. One is the VAS score, which is measured once a day and is a validated method of measuring pain; The other type is "yes/no", which is mainly used in this study, both of the two methods are subjective evaluation method, we consider the latter is more suitable for model construction and evaluation for dichotomy (whether the patients are unbearable pain or not).

And we insist that this approach is more helpful for postoperative management: if the patient is unbearable, painkillers are given, if not, painkillers are not necessary. Patients are asked every day whether their pain is unbearable enough to require the use of painkillers. Once within three days, if the patients report unbearable pain and need to use painkillers, they will be recorded as the "postoperative pain group". Otherwise, they are classified as the "non postoperative pain group".

Changes: See page 6, line148-151. We add another sentence to further explain this: **In another words, once within three days, if the patients report unbearable pain and need to use painkillers, they will be recorded as the "postoperative pain group (marked as 1)". Otherwise, they are classified as the "non postoperative pain group (marked as 0)".**

Page9, line197: (loxoprofen sodium).

Comment: what is degree of tonsillectomy?

Reply: Thank you for your comment, pointing out this error. This is actually a slip of the pen, what we are actually talking about is the degree of hypertrophy of the tonsils.

Change in the text: We have changed the “degree of tonsillectomy” into “the degree of hypertrophy of the tonsils”,see Page 9, line 203.

Comment: the AI technology is not mentioned in method.

Reply: Thanks for the suggestion, the machine learning (ML) technique is belong to the artificial intelligence (AI), we have describe the ML but forget to describe AI. we have add a sentence to explain this in the method section.

Change in the text: Page8, Line174-175. **Artificial intelligence (AI) technology includes machine learning (ML) and deep learning, and this study mainly uses ML technology.**

Comment: is preoperative photos of tonsils routine practice at other institutions in China?

Reply: Not all hospitals in China conduct image collection for patients with tonsil diseases, but some large hospitals, such as our hospital's Otolaryngology Head and Neck Surgery department,

routinely conduct comprehensive otolaryngology and head and neck examinations for all patients. Additionally, each of our clinics and wards is equipped with high-definition nasal endoscopy and laryngoscope systems. After obtaining patient consent, we will routinely collect tonsil images from patients, in order to better communicate with patients about their condition and reduce medical disputes.

Change in the text: None,

Comment Part 2:

What method did you use to standardise measurement of distances? (i.e. distance from oropharynx)

Reply: we have mentioned this in the “*Measurement parameters*” section of the method section:

The collection and measurement of all pictures were completed by the same doctor. An open-source image editing software "GIMP" (<https://www.gimp.org>) was used to measure the parameters. In fact, this study mainly focuses on the ratio between different distances, rather than a specific value, so no matter how much the image is magnified, the measured ratio is consistent and will not be affected by the size of the image.

We have also mentioned this in the second paragraph of the same section above: Since it is hard to measure the specific values of the tonsils when the patients were awake, we chose to analyze the ratio of the parameters measured through the photos of the tonsils. In this way, the measured ratio is constant regardless of how the image is scaled.

Changed in the text: None.

The amount of pain relief is not accounted for in this study. Also I question the validity of measuring pain as "tolerable". Can you please comment further?

Reply: we have explain this in above,which is:

There are two types of postoperative tonsil pain measurements, and we have actually recorded both. One is the VAS score, which is measured once a day and is a validated method of measuring pain; The other type is "yes/no", which is mainly used in this study, both of the two methods are subjective evaluation method, This cannot be avoided by the subjective perception of patients. We consider the latter is more suitable for model construction and evaluation for dichotomy (whether the patients are unbearable pain or not). And we insist that this approach is more helpful for postoperative management: if the patient is unbearable, painkillers are given, if not, painkillers are not necessary. Patients are asked every day whether their pain is unbearable enough to require the use of painkillers. Once within three days, if the patients report unbearable pain and need to use painkillers, they will be recorded as the "postoperative pain group". Otherwise, they are classified as the "non postoperative pain group".

Changed in the text: Same as above mentioned.

Is it routine practice to take preoperative photos of tonsils in other hospitals in China?

Reply: Not all hospitals in China conduct image collection for patients with tonsil diseases, but in several large hospitals, such as our hospital's Otolaryngology Head and Neck Surgery department,

routinely conduct comprehensive otolaryngology and head and neck examinations for all patients. Additionally, each of our clinics and wards is equipped with high-definition nasal endoscopy and laryngoscope systems. After obtaining patient consent, we will routinely collect tonsil images from patients, in order to better communicate with patients about their condition and reduce medical disputes. **Nowadays, there are frequent doctor-patient disputes in China. We take such measures to conduct deeper communication with patients to reduce doctor-patient disputes.**

Changed in the text: None.

Tonsillectomy is known to be a painful procedure, especially for adult patients. Preoperative counselling is essential, especially during the informed consent process, in order to prevent unplanned presentations to the emergency department. How does this study change clinical practice?

Reply: Thank you very much for agreeing with this point, which is to predict or manage postoperative pain for patients undergoing tonsillectomy in advance. Many scholars are exploring and conducting research on this point. Our team has focused on predicting and evaluating postoperative pain in tonsil patients in the past two years, continuously exploring and discovering that using cold water irrigation during low-temperature plasma surgery can improve postoperative pain in patients ([see Reference 10](#)).

Changed in the text: We have add a highlight box to explain this, see page3, line65-67

In this study, we also explored the predictive value of preoperative tonsil photos for postoperative pain, which is a meaningful attempt. Although it may not immediately promote more hospitals for clinical application, future studies with larger sample sizes and multiple centers may help better predict postoperative pain for patients.

In the future, we will continue to conduct more research and strive to contribute more to the field of postoperative pain in the tonsils.

Thank you again for the reviewer's feedback.