

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	WHAT IS THE CARE PATHWAY OF PATIENTS WHO UNDERGO THYROID SURGERY IN FRANCE AND ITS POTENTIAL PITFALLS ? A NATIONAL COHORT
<b>AUTHORS</b>	Mathonnet, Muriel; Cuerq, Anne; Tresallet, Christophe; Thalabard, Jean-Christophe; Fery-Lemonnier, Elisabeth; Russ, Gilles; Leenhardt, Laurence; Bigorgne, Claude; Tuppin, Philippe; Millat, Bertrand; Fagot-Campagna, Anne

### VERSION 1 - REVIEW

<b>REVIEWER</b>	Robin T Vollmer VA medical center, USA
<b>REVIEW RETURNED</b>	13-Sep-2016

<b>GENERAL COMMENTS</b>	This is an important paper summarizing practices for diagnosing and treating thyroid lesions in France. The authors observe differences in frequency of thyroidectomy and use of FNA from various regions. They should use some statistics (e.g. equality of proportions test) to strengthen this conclusion, and apply this approach to any variable they think may differ from region to region.
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<b>REVIEWER</b>	Luc Morris MSKCC New York USA
<b>REVIEW RETURNED</b>	24-Oct-2016

<b>GENERAL COMMENTS</b>	<p>This is well-written and interesting paper from Mathonnet and colleagues which seeks to audit the national performance of thyroid surgery in France based on an excellent dataset resource covering 77% of the population. The authors demonstrate deficiencies in preoperative workup, overuse of certain tests, and provide a reliable accounting of postoperative complications. Overall the data are important to the field.</p> <p>A flowchart of patient inclusions/exclusions akin to a CONSORT diagram should be provided.</p> <p>A figure showing regional variability in certain tests such as FNA would be informative given some of the conclusions drawn about this</p> <p>Can the hypoparathyroidism numbers be expressed with total thyroidectomy as the denominator? (ie, excluding hemithyroidectomy)</p>
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	<p>This dataset may not provide information on cancer size. Nevertheless, there may be other data that allow the estimation of the number of cases in the country that are microcarcinomas undergoing surgery. Can the authors make any estimations about this number and any recommendations about how to mitigate overtreatment of microcarcinomas? Should FNA of &lt;1cm nodules be discouraged as the current ATA guidelines do? Should active surveillance of these cancers be included as an option in the French guidelines?</p>
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**VERSION 1 – AUTHOR RESPONSE**

Reviewer 1 request

- We added statistical tests for 3 types of regional comparisons that we performed.

Reviewer 2 requests

- We are sorry that we do not provide a flowchart. We tried to make one but it appears to be very simple: it starts with a population database of 50 million people, among which 35,367 people underwent thyroidectomy, which divides into 4 groups (cancers, benign nodules, multiple nodules, and goitre and others). This is already described in table 1. There is no other contributing detail that we could think of, as all other cases were grouped into the « other »category and were not studied. No exclusion was made. We made it clearer at the beginning of the results section.
- We added 2 figures showing the regional variability of both thyroidectomy and ratios of the number of thyroidectomies with a diagnosis of cancer over the number of thyroidectomies with a diagnosis of benign nodule. We also calculated, as suggested, regional rates for FNA tests in case of benign nodule or cancer which is also an interesting contribution, and added a third figure.
- We calculated the rate of hypoparathyroidism in people with total thyroidectomy, which increases and makes another interesting point to our discussion.
- The reviewer is right as the database does not provide information on cancer size. We provided -as rightly suggested -figures and references from a French registry at the beginning of the discussion, and also discuss potential strategies to improve current practices in the conclusion.

We hope that you will find our paper acceptable for publication. We are looking forward to hearing from you soon.

**VERSION 2 – REVIEW**

<b>REVIEWER</b>	ROBIN VOLLMER VA MEDICAL CENTER, USA
<b>REVIEW RETURNED</b>	06-Dec-2016

<b>GENERAL COMMENTS</b>	<p>This study addresses important issues for French doctors and their patients. I have just 2 suggestions:</p> <ol style="list-style-type: none"> <li>1. Would it be possible to study the relationship between the rates of thyroidectomy (figure 1) and the rates of FNA diagnosis (figure 3), community by community and do a regression analysis to test the hypothesis that higher use of FNA is associated with lower rate of surgery?</li> <li>2. Some points in the discussion repeat points made in the introduction and results. I believe that the discussion could be shortened.</li> </ol>
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<b>REVIEWER</b>	Luc Morris MSKCC
<b>REVIEW RETURNED</b>	03-Dec-2016

<b>GENERAL COMMENTS</b>	Manuscript is much improved. An important contribution to the literature on care pathways in France with particular relevance for overdiagnosis and overtreatment.
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### VERSION 2 – AUTHOR RESPONSE

I would like to thank the reviewers for their comments.

A complementary study was performed to analyze the relationship between the rate of thyroidectomy and the ratio of FNA, region by region. The result confirms the hypothesis. The regional rates of fine-needle aspiration cytology were significantly correlated with the regional rates of thyroidectomy (Spearman correlation coefficient test:  $r=0.48$ ,  $p=0.034$ ). It was included p13.

The discussion was revised and the repeat points were removed. So the discussion was shortened. All changes were highlighted.

We hope that the revised manuscript retain your attention.

### VERSION 3 – REVIEW

<b>REVIEWER</b>	Robin Vollmer VA, USA
<b>REVIEW RETURNED</b>	09-Jan-2017

<b>GENERAL COMMENTS</b>	Informative study.
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<b>REVIEWER</b>	Luc Morris MSKCC, USA
<b>REVIEW RETURNED</b>	09-Jan-2017

<b>GENERAL COMMENTS</b>	My concerns have been addressed by the authors.
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