LETTERS TO THE EDITOR

Considerations in relation to the learning curve of thyroid fine-needle aspiration biopsy and own experience of our center

Consideraciones en relación a la curva de aprendizaje de la punción-aspiración con aguja fina de tiroides y experiencia propia en nuestro centro

Dear Sir,

In recent years, the introduction of high-resolution units has increased the importance of the adequate training of endocrinologists, new to thyroid gland ultrasound, including the performance of associated techniques, mainly fine-needle aspiration biopsy (FNAB). In addition to the theoretical training, this complex technique undoubtedly requires practicing time in order for it to be performed with guaranteed safety and for the patient, as well as with the greatest possible effectiveness. However, to date, few publications have addressed the existing learning curve of the fine needle aspiration biopsy of the thyroid gland. The article published by Penin et al., which sheds some more light on this subject and has allowed the learning curve to be characterized, is therefore to be recognized and applauded. However, given our experience, some questions may be raised and comparisons can be made with the learning curve observed at our center based on a retrospective study compiling the pathology findings from patients subjected to ultrasound-guided FNAB performed by the same endocrinologist in the period between September 2014 and June 2016.

The need for intensive training in performing this diagnostic technique was already known, because its main disadvantage and limitation is the incidence of inadequate and non-evaluable samples for diagnosis, which under optimum conditions should not exceed 20%. In this regard, up to three punctures in the same FNAB procedure are needed to ensure the maximum diagnostic yield according to the existing guides and related articles. Based on the analysis of the results of the article, we established a cut-off point defined as 60 ultrasound-guided FNAB procedures with two punctures in each procedure, to secure a learning curve affording a percentage diagnostic rate of over 80%, or similar to the performance of the reference expert endocrinologist.

A study was made comparing three blocks of 20 punctures each to determine whether there were differences between the first and last blocks and between the two endocrinologists. We considered that it might also be interesting to perform a cumulative frequency analysis of valid FNABs to assess not only improvement in performance, but also the maintenance of the success rate. This, in turn, would allow us to identify the moments in which significant fluctuations can be seen. An example of this is shown in Fig. 1.

Despite the limited literature, the existing studies disagree on the number of ultrasound-guided FNAB procedures required to secure optimum sample diagnostic yield.

In turn, we feel that there may be some ethical concerns in the study carried out by Penin et al., because it involved four punctures targeted to the same nodule in each patient, corresponding to two punctures per ultrasound-guided FNAB procedure performed by the expert endocrinologist and the novice. As previously mentioned, there are articles and guidelines that recommend three punctures per FNAB procedure in order to minimize the percentage of inadequate samples. However, in the abovementioned article

Figure 1. Curva de aprendizaje de ECO-PAAF.
Learning curve of thyroid fine-needle aspiration cytology in a thyroid nodule clinic

Curva de aprendizaje de la punción-aspiración con aguja fina en una unidad de tiroides

Dear Sir,

We have read with interest the article published in *Endocrinología, Diabetes y Nutrición* by Manuel Penin et al. on the learning curve of ultrasound-guided thyroid fine-needle aspiration biopsy (FNAB) in the hands of a specialist in endocrinology. The authors present an analysis of the learning curve of FNAB, comparing the results obtained by an experienced endocrinologist versus those of an inexperienced colleague. The main conclusion of the study is that the technique can be adequately mastered after approximately 60 FNAB procedures involving two punctures each, and performed over 8 clinical working days.

As the article itself recognizes, there is not enough published evidence on this matter. In this respect, it is good news that there are efforts such as the present study, capable of shedding more light on a technique that is gradually being adopted by endocrinologists in our setting. However, in our opinion, the results and conclusions derived from the aforementioned study differ from the prevalent experience of any specialist who has acquired learning in ultrasound-guided FNAB, as well as from the results published by some of the pioneering thyroid units in Spain.

Fig. 1 shows the number of punctures performed and the 6-monthly evolution of the percentage of inadequate samples for diagnosis obtained by ultrasound-guided FNAB since the inauguration of the thyroid unit at our center in 2009. The results referring to the learning curve were analyzed using the SPSS® version 20 statistical package.

![Figure 1](image_url)

**Figure 1** Porcentaje insuficientes para diagnóstico. Periodo 2009–2016.

### References


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**Learning curve of thyroid fine-needle aspiration cytology in a thyroid nodule clinic**

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