Author's response to reviews

Title: Appropriateness of elective caesarean deliveries in a perinatal network: a cross-sectional study

Authors:

Françoise Vendittelli (fvendittelli@chu-clermontferrand.fr)
Marie-Caroline Tassié (mc.tassie@gmail.com)
Laurent Gerbaud (lgerbaud@chu-clermontferrand.fr)
Didier Lémery (dlemery@chu-clermontferrand.fr)

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Author's response to reviews: see over
From: Françoise Vendittelli, CHU de Clermont-Ferrand, Hôpital Estaing, Pôle de Gynécologie-Obstétrique et Reproduction Humaine, 1 place Lucie et Raymond Aubrac, Clermont-Ferrand cedex 1. T: (33) 04 73 75 11 23; email: fvendittelli@chu-clermontferrand.fr.

To: The Editor in Chief of BMC pregnancy and childbirth

Clermont-Ferrand, February 10, 2014

Dear Sir,

We thank the reviewers for their thorough comments, which were globally favorable to our study, "Appropriateness of elective caesarean deliveries in a perinatal network: a cross-sectional study" [Ref.: MS: 1056914910111677].

Modifications to the article are in red in the text.

**Reviewer #1: Lars Ladfors**

**Reviewer's report:**
The paper "Appropriateness of elective caesarean deliveries in a perinatal network" is focusing on an important area in modern obstetrics, the rising CS rate without any proven benefit. The paper is a study about the possible impact of including doctors in a retrospective analysis of indications for elective CS as a method of lowering the rate of CS.

Statistical analysis should be: The qualitative variables were compared with a Chi2 statistical test and categorical variables were analysed using the Fisher's exact test. I presume you used the methods like this?

**Answer to reviewer:** In light of your comments and those of reviewer 2, we have modified the statistics section.

**MAJOR ref 4 should be:** [http://www.europeperistat.com](http://www.europeperistat.com)

**Answer to reviewer:** We have made the correction.

**MINOR** fig 1 shows n=26/92 ; 28,3% but in the text (page 6= 26/192? 13.5%)

**Answer to reviewer:** The overall rate of appropriate caesareans among the planned caesareans was 65.6% (95%CI: 58.9-72.3). Of the 192 records examined, 52.1% (100/192) of the caesareans were appropriate based on the existence of at least one criterion of appropriateness, and 13.5% (26/192) more based solely on professional judgement (Figure 1). There is no error: n= 192 is the total number of files: among them, (100+26)/192 of the caesareans were appropriate. The ratio of 26/92 is a different number: the percentage of cases considered appropriate based solely on professional judgement records among the 92 cases.
considered and debated by the experts. The figure is important precisely because changing the
denominator constantly in the text is very likely to confuse the readers.

MINOR : The material is too small to really be able to compare possible differences
between level I II or III and table 4 could be dismissed.

Answer to reviewer: In view of your opinion as well as those of the other reviewers,
the analyses and tables have been modified.

Discretionary : There are different methods to lower the CS rate in cases without medical
indications, there will never be zero cases of “maternal request” but if you offer/demand that
these women meet expertise in this field before delivery may be 50% will have a normal
delivery. Next problem are doctors deciding for CS on non-medical grounds without maternal
request. This is also an important subject that should be addressed in the discussion.
With these changes your paper should be published as a paper showing the
importance and need for audit in obstetrics.

Answer to reviewer:
Most studies have shown that it is difficult to reduce caesarean rates by actions targeted at
either women or professionals. This is the reason that our work is interesting. We agree with
the reviewer that our objective was to show the importance of audits in obstetrics. It is for this
reason that the discussion contains an extensive description of this audit method, which is
little known in obstetrics. It would be unethical to perform a caesarean delivery without the
woman's consent and without explaining to her clearly the benefits and risks of each type of
delivery. The manual on certification of French healthcare facilities, under the guidance of
HAS (French National Authority for Health), specifies that this risk-benefit analysis must be
mention in the case records. We have also revised the discussion on the topic of the actions
directed at women (and also professionals) aimed at reducing the caesarean rate.
We had already mentioned in the discussion that: "It should be noted that the reported rate
does not generally match the real rates and that the obstetrician can influence the mother's
preference [46]”.

Level of interest: An article of importance in its field
Quality of written English: Needs some language corrections before being
Published

Answer to reviewer: The article was translated by a professional biomedical
translator and editor, who has reviewed and revised this new version for resubmission.
Reviewer's report # 2 : Sandra DAVID TCHOUDA
Reviewer's report: Original article because the analysis methods and expected outcomes are usually relevant. Moreover, and I agree with the authors, this article has the great advantage to have better understood by clinicians and therefore better reflected.

BACKGROUND
(Discretionary Revisions) I would point sources in the first paragraph: ‘The rate of AUDIPOG network and national perinatal survey in 2010 agreed to show that…’ M&M

Answer to reviewer: These two sources are now cited (reference 1 and 2). The guidelines for authors advise against mentioning web sites in the text.

(Major Compulsory Revisions)
-I would like to understand what is the specific study design:
• In the study design, is it a retrospective cross sectional study or an historical study which is prospective?

Answer to reviewer: An audit is a cross sectional study, and the data collection for the audit was retrospective. It is not an historical cohort study.
The sentence on page 5 ("This appropriateness review was conducted retrospectively from the patient's medical records.") was probably unclear. We have rewritten it to say: This appropriateness review was conducted from the patient's medical records. The text explains clearly how the audit was performed. A prospective study could not have been performed with this method.

We have also modified the sentence on page 5 ("The study took place from October 2011 through January 2012 and covered all 10 RSPA maternity units") to say that “The audit took place from October 2011 through January 2012 and covered all 10 RSPA maternity units”. The term audit should be clearer to English-speakers.

• This study seems exhaustive over a period? If yes, authors should say clearly

Answer to reviewer: Yes, this study was exhaustive over the study period, which varied slightly for each maternity ward.
The sentence on page 5 was corrected ("All maternity units were asked to pull and provide, in chronological order") is intended to mean that the record collection was exhaustive. At the beginning of the study we asked to have no more than 50 medical files per maternity ward. Actually, no maternity ward had up to eligible 50 medical files! For more clarity, we also added a sentence on page 7: "The day of the audit, we verified from the delivery register in each maternity unit that all records meeting our eligibility criteria had been identified."

-In statistical analysis: authors forgot to describe the descriptive study
(Discretionary Revisions)

Answer to reviewer: Yes, you're right! We have added a sentence to the statistics section (p.6).
-What do authors mean by ‘Data abstraction’?

**Answer to reviewer:** We have corrected the term on (page 5) « Design, interventions and data extraction”

RESULTS

(Discretionary Revisions)

-I found ‘Table 1’ at the end of results after others tables…

(Minor Essential Revisions)

**Answer to reviewer:** Table 1 was introduced in the text before Table 2 (see page 4 in the materials section). There was no mistake.

-Have authors collected reasons of maternal convenience? If yes, author should have to describe them.

**Answer to reviewer:** Unfortunately, no, because this was not a study with prospective data collection and/or an interview with the women. This information is not available in detail in the medical files. Our data collection was retrospective, as explained above, although the data were initially recorded prospectively. This information is not reliably available for all the records. As the French health insurance fund reimburses only necessary medical care, a caesarean at the woman's request would not be reimbursed — and this explains why the doctors often noted in the case file medical but invalid indications for the caesarean, so that the women would not have to pay for it (the terms non-medical or convenience caesarean were found very rarely in the indication for caesarean in the surgery file). Talking to the obstetricians (and examining the complete medical files), it was clear that the reasons mentioned were not accurate.

Table 1 and 2 (Minor Essential Revisions)

- Are the both tables helpful? Maybe, Author should put columns of the number of deliveries in table 2; otherwise table 2 seems not helpful…

**Answer to reviewer:** Table 2 has been deleted (as requested) and combined with Table 1.

Table 3 (Major or Minor Essential Revisions?)

-I’m not sure to understand what is the assumption of the only pvalue described in table 3 (0.20): is it to compare the 6 percents? If yes, what is helpful? Comparisons would be preferable 2*2, may be with relative risk of inappropriate rate of CS?

**Answer to reviewer:** The statistical test was conducted to determine if the distribution of appropriate and inappropriate caesarean rates differed according to the level of the maternity units.

- The description of the 95%IC is more informative than p value (I’m agree with authors) but finally it becomes difficult to compare 3 percents together (appropriate or not) according to the level. Describe the RR according to a
reference level would allow to have an easier interpretation and to have expected statistic tests.

**Answer to reviewer:** Because this is not a cohort study, we cannot calculate a RR. We must instead calculate an OR (see Table 2, formerly 3).

In light of your comments and those of reviewer 1, we have modified the statistics section (p 6).

Table 4 (Major or Minor Essential Revisions?)
-Same remark as above concerning the only p-value described in table 4 (0.51): Comparisons would be preferable 2*2 (RR), especially if there are too few patients in level 3...

**Answer to reviewer:** We have calculated an OR (see Table 3, ex-table 4). See also our comments above.

**DISCUSSION (Minor Essential Revisions)**
-Authors said: ‘the use of expert guidelines may overestimate the real level of appropriateness rate, as physicians using a given medical technique tend to overrate its appropriateness (28)’
May be the authors could detail or argue this idea? Indeed, I thought naively that the use of expert guidelines may overestimate the real level of appropriateness rate, as physicians using a given medical technique tend to overrate its appropriateness; but the use of expert guidelines may underestimate the real level of appropriateness rate...

**Answer to reviewer:** As the review is addressed to physicians, we intentionally sought to avoid too detailed a description of the technique and of the issues concerning the medical technology assessment. On the other hand, we provided the reference for those interested in considering these issues in more detail.

It is common that physicians using a medical technique tend to overestimate its appropriateness for they trust procedures they do regularly. This can be also the case of medical guidelines developed by only physicians who are experts of the assessed process. (Brooks RH et al. Do patient, physician, and hospital characteristics affect appropriateness and outcome of selected procedures? Rand R 3929, 1991, Santa Monica, CA, USA).

**REFERENCES (Major Compulsory Revisions)**
-Following references are not accurate enough and authors should be more precise about web addresses in particular (ref 3 to 8 and ref 16 to 26, ref 31)

**Answer to reviewer:** We have been more precise about the URLs for references. Nonetheless, 17-24 are correct and precise.
Reviewer's report # 3: Corinne Dupont

Reviewers report:
major compulsory revisions
Level of interest: An article of importance in its field
Quality of written English: Acceptable
Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests: 'I declare that I have no competing interests'

Appropriateness of elective caesarean deliveries in a perinatal network: a cross-sectional study

Objective
The principal objective of this work was to describe the global appropriateness of indications for caesareans among the planned caesareans performed within the Auvergne perinatal health networks. The secondary objectives were to describe the appropriateness of planned caesareans according to the level of units unit and the impact of this medical assessment on the global caesarean rate.

This study talks about two important problems: the appropriateness of indications for planned caesarean and the reduction of the overall caesarean rate by an audit?

Nevertheless, this study present some weakness:

1. This study describe the indications of a few planned caesarean not overall planned caesarean during the period of observation in each maternity. We don’t know if all cases of planned caesarean have been selected in each maternity? Is there a control of exhaustivity of cases? and so, how have been selected theses cases. Each obstetrician may be selected and analysed the cases according his choice. In the 10 units, the proportion of planned caesarean as part of overall caesarean, which has been analyzed by the staff, was different and varied between 2.3% to 26% of overall caesarean during the period of observation (table herebelow). We don’t know the exactly number of denominator. Some units have selected more cases than other units. so, the result is not representative with the real activity according the units. We could not verify that the rate of planned caesarean is the real rate in each maternity. The internal validity could not be verified. The authors cannot compare this rate with intenational rate because they not observed all cases of planned caesarean.

The proportion of planned caesarean cases is 7.9% for the perinatal network. Even if the proportion of planned caesarean was 50% as part of overall caesarean, we expected to observe 40 to 50% of planned caesarean cases but we observed only 7.9%. There is a bias of observation. Therefore, table 3 and table 4 are not valid.

Answer to reviewer: We disagree with the reviewer. Except in specific circumstances there is no need to audit every record (here all the records of women who had planned caesareans). It is needlessly cumbersome and inefficient. We clearly explained the eligibility criteria on pages 4 and 5 (Our sample included women who had a planned caesarean delivery (before or during labour) at or after 37 weeks of gestation, were primiparous or nulliparas, and had a singleton pregnancy in cephalic presentation or a twin pregnancy with twin 1 in cephalic presentation…). Because audits cannot be performed on the same day in every maternity units, the time between the beginning of the year and the moment of the audit must vary, and with it the number of deliveries. Moreover, the very activity of the maternity units
suffices to explain that their caseloads differ, as do their practices. It is for this reason that we compared results according to maternity unit level. All records of planned caesareans were selected from the delivery registers and we then included only those that met our eligibility criteria. All the eligible records were therefore audited within each maternity unit. This was checked by the network coordinator, onsite, during these inspections. There were therefore no errors and no bias.

The denominator was given: n= 192. The rate is valid within the network and within each maternity unit. The comment that the authors cannot compare their rate with international rates is essentially irrelevant, for there are almost no studies from Western countries about the rates of appropriate elective caesareans that assess the reasons for their inappropriateness. Moreover most of the studies have involved self-reported data.

This report describes a procedure for the improvement of professional practices. The final objective, to be reached through a qualitative assessment of records, is to reduce the overall caesarean rate. If using a process that involves relatively few records allows us to bring down this rate, the method is highly interesting (in that it appears to be reliable, valid, reproducible, and efficient).

As we explained clearly in the text, this is not an epidemiologic study aiming to identify the proportion of inappropriate caesareans within the entire set of planned or elective caesareans. That is, we do not want to audit all records of all planned caesareans to determine their appropriateness because some of them clearly involve appropriate and unmodifiable indications (women with more than one previous caesarean, obstructive placental insertion, transverse presentation, etc.). We describe something different here: an evaluation of professional practices within a network, seeking to demonstrate that in reviewing a few records (that is, in applying restrictive selection criteria for planned caesareans), we can modify the overall caesarean rate. The selection criteria were carefully considered and chosen; those that doctors out were excluded (twins with the first twin in non-cephalic presentation) or when French practice leaves the choice to the woman (breech presentation at term). There is therefore no observation bias: all the eligible files were audited. Defending an audit of all planned caesareans would have discredited the method in the eyes of the obstetricians at whom it was directed.

The last two tables have been reviewed, as also requested by the first two reviewers.

Changes have also been made to clarify points on page 5 (in the materials), 6 and 7.

2. between 2011 and 2012, the rate is statistically different in only two units of the perinatal network, this element must be precise in this article (abstract, text and conclusion): the number 3 and 10, probably because the rate in the first period was the more higher. We could be interested to search the reasons about this changement in only these two units. what are the characteristics of these units ?

Answer to reviewer: The detail that the reduction in the overall caesarean rate was statistically observable in only 2 maternity units in the network has been specified as requested in the abstract (page 2), text (page 9 in results), and conclusion (page 13).
Looking for the cause of this reduction in these 2 maternity units would be interesting but would require an ad hoc psycho-sociological study. Table I shows that one is a level I and the other a level II unit. The level II hospital had a rate higher than the level-III unit and the highest rate of all level 2 facilities. The level-1 maternity ward did not have the highest rate among the level-I facilities, but it was higher than the level III ward. There really is no more to say about it, and this information is in the table.

3. The rate of caesarean has been reduced in these two maternity but we don’t know if this concerned the rate of planned caesarean ? and so, if this reduction concerned the planned caesarean before 39 wa, because early caesarean could be caused an respiratory insufficiency. This element hasn’t been approaching.

**Answer to reviewer:** The ultimate objective of this work to improve professional practices is a reduction in the overall caesarean rate, and the literature shows clearly that to reduce this rare it is necessary to prevent first planned caesareans because the caesarean rate is very high among women with a previous caesarean. An assessment of the reduction in planned caesarean rates is planned for the audit now underway, which unfortunately cannot be completed until 2014. That is, the number of records studied during second audit, in 2013, was not sufficient to allow before-and-after comparisons; this finding shows that the professionals have indeed modified their practices, because the number of records eligible for our audit has dropped over time, that is, more women meeting our audit selection criteria have had planned vaginal deliveries.

4. We would like to know if the reducing of rate of overall caesarean has been an impact positive or negative in perinatal morbidity or mortality ?

**Answer to reviewer:**
A large number of publications have shown that a reduction in the caesarean rate is not accompanied by an increase in perinatal morbidity and mortality rates; indeed, if that were the case, such an audit would be unethical and guidelines on this topic would not be under development in Western countries. We note that inversely, in rich countries, the increase in caesarean rates has not been accompanied by a reduction in the cerebral palsy rate. In our network, analyses of perinatal and neonatal morbidity and mortality (in others audits) have tended to show a reduction in the avoidability rates over the past 10 years.

We do not wish to burden the discussion with what is a red herring in rich countries.

5. We would like that the authors will compare the rate of caesarean according the status of these 10 units, private, public or university hospital. Because the rate in private units is often more higher than in public unit.

   Answer to reviewer: That is essentially meaningless in our region, which has only one private unit, as pointed out again on page 4.

6. In each maternity, one or several senior participated but we don’t know the exact number and the proportion among the overall number of obstetricians. To change practice is very difficult. In private maternity, all obstetricians are independant, so if only one obstetrician participated it is very difficult to change the practice for overall obstetricians. It may be more easy in public area to change practice with a leader and a chief of department than in private unit.

   Answer to reviewer: We cannot continue to add information of only secondary relevance to the article. There is only one private maternity unit in the region; it has three senior obstetricians and a midwife-manager. Following the network audit, the private maternity unit has continued this work of practice improvements, and the results were disseminated widely in-house and, indeed, to all obstetricians in the region. The reviewer’s comments reflect her role as the coordinator of a much larger network in a region near ours where the smooth federation into the network of the private maternity units and indeed of the private practitioners is a much more difficult task. It has been considerably simpler in Auvergne, which has substantially fewer deliveries and only one private facility, whose director, moreover, is also co-president of the network. This article is not intended to cover the topic of this internal French debate and the philosophical disagreement between networks about how best to work with professionals. In any case, these networks are not comparable in their number of deliveries or of maternity units, especially private ones, and Auvergne is a semi-rural region, while Rhône-Alpes is heavily urban.

We have added on page 7 the minimum and maximum number of persons present at the audit in each maternity unit. There are only a few obstetricians in most of the maternity units in the region for several years; this is a real public health problem!

7. As we are at the end of the year 2013, it would be interesting to have the rate for 2013 to observe in the two units and the others units if the rate is consistent?

   Answer to reviewer: We agree! We await it impatiently, but as of today, we still have not received all the statistics from the maternity units. We conducted a second audit during 2013, but application of the same eligibility criteria resulted in notably fewer records to audit — a finding that in itself demonstrates a change in practices. We will therefore finish auditing the files from the end of 2013 in 2014. It is fascinating, but the publication is likely to be
delayed a year yet …. We think strongly that this tool is more efficacious than feedback about crude or adjusted caesarean rates and deserves to be known, disseminated, and used, to see its impact and acceptability elsewhere.

8. This decrease of planned caesarean rate in only two units may be explained by several factors, not only by the audit. The element could be precised in this article. The improvement of practise has owed by several factors. Furthermore, the decrease was observed into two units where the smallest proportion of cases were analyzed: 6 cases in maternity 10 (16.8% of overall caesarean during 4 month) and 12 cases in maternity 3 (6.3%).

**Answer to reviewer:** The overall caesarean rate was reduced, even though the statistical tests found a significant difference in only 2 maternity units. As Table 1 shows, however, caesarean results fell in 8 of 10 maternity units, a substantial result. And of course it is the result that is important, and not its statistical significance.

We conclude that this reduction is associated with the audit because the audit began before the development of French guidelines for caesareans, at a moment where there had no work on the subject in France. Only in 2013 did some networks work on adjusted caesarean rates. We also note that we are not defending this adjusted caesarean rates method without having tested it, which we did several years ago, after the publication by Sandra David and others (David S et al. Estimate of an expected caesarean section rate taking into account the case mix of a maternity hospital. BJOG 2001;108:919-26). We also note that before this audit, for the last several years, we have been providing each maternity unit with feedback on these indicators (we have added this information to the section "Description of the Auvergne Perinatal health; Network (RSPA)" on page 5).

9. The maternal preference could be varied according the information delivered by obstetrician about the indication of planned caesarean. This element wasn’t approach in this discussion.

**Answer to reviewer:** Yes but that remains theoretical and it is therefore difficult to discuss it, especially as the studies that target women to reduce the caesarean rates have had little or no impact. We have added these studies to the discussion.

10. This audit is easily to do but it take time: how many time to analyze each cases were necessary? The maternity 7 have 41 cases to review !

**Answer to reviewer:** We did not time the audit in each maternity unit, but because Auvergne is a geographically large and also largely rural region, the travel time between each maternity unit is long. Including travel time, we needed to count a full day for each maternity unit. The audit time, interestingly, is not correlated to the number of case files analysed but rather to the quality of the record-keeping and their computerization. Accordingly, for the level III hospital, which had a large number of records that are, however, totally computerized, it took only a half-day to perform the audit.
11. We don’t know:
– if some actions hasn’t been recommended after this audit? And what actions are recommended?

**Answer to reviewer:** This was, in part, mentioned on page 13, at the end of the discussion: "We have provided each hospital with its own rate of inappropriate caesareans and the reasons for their inappropriateness, compared with the means for the network:" We have added a sentence to mention explicitly the regional professional training day on this topic.” We also organised a day of continuing medical education about caesarean deliveries in April 2012, in Auvergne.

- If the these actions have been followed by coordinator of perinatal network?
In conclusion, this study must be a observational study. it is no valid to compare the rate of appropriate caesareans according the level (table 3), idem for the table 4. The positive impact of this audit must be describe with caution; the rate of overall caesarean in 2013 will be very interesting to observe.

**Answer to reviewer:** Yes, the study was followed by the network coordinator, who is an obstetrician (as well as the first author) and who also served as the external expert, as specified in the article. We therefore gather that the reviewers were blinded to the authors’ names. That was mentioned at the top of page 7. The author's affiliation with the network is also reported on page 1 of the submission.

We have reviewed and revised the methods section as well as all the tables.

Abstract:
there is no the period of observation: page 5 october 2011 and page 9 october 2010
Add or point ou that the rate decreased after this audit between ….
It is more exactly to tell:
- that only two units have observed a deceased of overall caesaerean rate
- in conclusion, the audit is associated with a reduction of overall caesaerean rate in two units, but several factors have been contribued

method
insert reference when authors talk about national guidelines
explain what « level » maternity is?
is there a control of exhaustivity of cases?
what is the proportion of obstetrican reviewer in each maternity among the overall obstetrican?
the coordinator is an obstetrician in the level 3 maternity: is it a other externa l expert?
What is about the information delivered to women?
Is it the same staff in each hospital during the period of observation?
results
insertion of the description of the results according the status of maternity
at the top of page 7, it is not necessary to repeat that the rate was 34.4% because it is inverse rate of 65.9%, yet explained page 6.
The global rate decreased in only two units not in all perinatal network: it is important to describe it exactly.
No date about perinatal morbi-mortallity? the decaesed of the rate is it associated with no deterioration
Answer to reviewer:
Thank you for noting the typing error on page 9.
The abstract has been revised (see comments above). On the other hand, references are generally specifically forbidden in abstracts.
The fact that all records meeting our selection criteria were audited has been specified in the text.
We prefer not to overload the abstract with details. The description of units is explained at the bottom of Table 1.
Some of these comments have been discussed above.
This is a pragmatic audit and not either a before-and-after study or a randomized trial, and the data collection was retrospective: it is therefore impossible to standardize the information that was given to the women!

Discussion
In the first paragraph a summary of major topics of the study may be presented before the discussion
Page 9 the number of cases for each maternity could be presented with the percentage: this information is more pertinent than a number because to reflect activity, the number must be compared with the total number of caesarean. If the percentage is too small, it is not reflect and represent the real activity

Answer to reviewer: The last two tables have been reviewed, as also requested by the first two reviewers. The importance of an audit is not the number of records. It was impossible here to calculate in advance the number of records, as we could not know in advance how many met the selection criteria
A sentence describing the results has been added at the beginning of the discussion, as requested.

Table 1
To describe the rate of caesarean it is preferable to have a column with the number and a column with the %, to avoid to repeat n= at each liner.
2011
n %
Maternity unit 1 736 21.4
Table 2
Insertion of the proportion of planned caesarean as part of overall caesarean during the period of observation
Insertion of the real number of planned caesarean and the % of planned caesarean which have been analyzed

Answer to reviewer: Tables 1 and 2 have been combined. The new table 1 is therefore rather large and we cannot insert other columns.

References
The terms in french haven’t been translated
Reference 3 to 8 are insufficient to found information associated in the text

Answer to reviewer: The titles published in French have been left in French, but we can translate them if the review so wishes. The guidelines for authors did not specify whether non-English references had to be translated into English.
All the E-mail references have been checked as requested by the reviewer 2.

Editor's Comment:
------------------------------------------------------------------
This article is focusing on an important area in modern obstetrics. However, the article need clarifications concerning aim, method, and results. The discussion should focus on "maternal request".

Answer to editors:
We have clarified the aim, methods and results in accordance with the reviewers' comments. The details in the discussion about the method are important in view of the fact that this method is little known and rarely used in obstetrics, as some of the reviewers' comments indicate. We have enriched our discussion of the possible effective actions directed at both women and professionals that might reduce caesarean rates.