TEACHING OBSTETRICS.[1]

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In most of our schools, a fairly good course of didactic lectures is given by the professor of obstetrics, who, however, usually delegates the recitations and demonstrations to his assistants, and is therefore unable to form a definite idea as to the practical knowledge and attainments of the individual student.

As far as we can learn, there are very few institutions in which it is attempted, in connection with the obstetric course, to give practical laboratory instruction upon the anatomy and pathology of the female generative organs, and of the various diseases which may complicate the pregnant, parturient, and puerperal condition, by which the student may gain an intelligent idea concerning the structure of the organs with which he has to deal, and of the morbid changes in the various diseases, which he may be called upon to treat. Unless such practical instruction is added to the theoretical teaching and the practical work in the lying-in ward, we cannot consider that the student has received a well-rounded course. And it will not be until our schools equip and maintain obstetric laboratories that we can expect our students to have an accurate conception of many of the conditions with which they have to deal.

How can we expect, for example, the student to have a definite conception of the changes in the endometrium, which result in the formation of the decidua, if he has not carefully studied and drawn sections of the normal endometrium and decidua, instead of hearing them described by a lecturer, who has obtained his knowledge from the meager descriptions of the text-books? Or, when studying the placenta, can he obtain an accurate idea of the structure of the chorionic villi, with their two layers of epithelium, concerning whose origin there is so much discussion; or of the nature of the intervillous spaces, unless he has carefully examined sections from placentæ at various periods of development?

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The ideal course in obstetrics, therefore, should include not only the usual lectures and practical work in the lying-in ward and upon the manikin, but also a certain amount of laboratory work; and may be considered under the following headings:

1. Lectures; 2. Recitations; 3. Manikin work; 4. Laboratory work; 5. Demonstrations; 6. Ward classes; 7. Delivery of patients in the lying-in ward; 8. Delivery of patients in the out-patient department; 9. Clinical conferences or clinics.

1. LECTURES.

At the present time, many teachers believe that didactic lectures are destined to be employed less and less, and eventually to give place to recitations and clinical conferences. We, however, believe that they still serve a useful purpose, but that their utility depends, to a great extent, upon the person giving them. If the teacher simply bases his lectures upon Lusk or some other standard text-book, we believe that he will best subserve the interests of his students by abandoning them, and allotting a certain number of pages or chapters of the text-book for recitation at each meeting of the class, which he will supplement by demonstrations of various kinds and free-hand drawings upon the blackboard.

If, however, he has higher aspirations than simply to rehash a standard text-book, and is able to avail himself of the recent English, French, and German literature, we believe that the didactic lecture will still play an important part in obstetric instruction, and will enable the student to obtain a rounded idea of the theory of obstetrics, four or five years in advance of the doctrines laid down in the last edition of his text-book.

The lectures should be accompanied by as many demonstrations as possible, and the teacher should rely less upon carefully prepared diagrams and drawings, than upon plentiful free-hand drawings upon the blackboard. The student may admire the former, but the latter he can reproduce in his note-book.

2. RECITATIONS.

A recitation hour should be interpolated between every third or fourth lecture, and the student questioned not only upon the work immediately preceding the recitation, but upon the work

so far as it has been covered, thus necessitating a constant review of the entire subject.

The students should be encouraged to ask questions freely, and the recitations should be conducted as informally as possible; but at the same time a record should be kept of the work done, which should be considered in estimating the final standing of the student.

The recitation is almost as important for the teacher as for the student, in that it enables him to impress upon the latter the important parts of the work, and frequently enables the former to see how very imperfectly he has succeeded in rendering his meaning clear. The recitations should therefore be conducted by the teacher himself and not be delegated to one of his assistants.

3. MANIKIN WORK.

Exercises upon the manikin should form an integral part of the obstetric course; but their scope should depend, to a great extent, upon the amount of material which is available for clinical instruction. If there is a large lying-in hospital in connection with the medical school, it will be unnecessary to attempt to teach the technique of abdominal palpation, vaginal touch, and internal pelvimetry upon the manikin, as it can be taught very much more satisfactorily upon the living woman. But if the clinical material is limited in amount, we consider it advisable that the students be taught the rudiments of palpation, touch, and pelvimetry upon the manikin, so that they will know exactly what they are to do when they examine the patients in the wards, whereby clinical material is economized, and the patients saved considerable annoyance. For this purpose, the Budin-Pinard manikin is to be recommended.

The main object of the manikin work is to teach the various operative procedures, and each student should be obliged to perform all possible operations upon the manikin, at least once during the session.

The manner in which the work should be conducted must vary according to the size of the class. If it is composed of 50 members or less, we believe it best to attempt to instruct the

entire class together. This can readily be accomplished by employing three or four manikins, say one to every 12 or 15 students, and having the professor at one and an assistant at each of the others. In this way, three or four men can be operating at the same time.

At the beginning of the hour, the professor should give an outline of the operation, its mode of performance, indications, etc., and then call upon the students to perform the operations themselves under his supervision. While this is being done, it is well to quiz the class, and thus make the meeting serve a double purpose. Such meetings should last about one and a half hours, during which at least 12 men can operate upon each manikin.

If the class exceeds 50 in number, it will be necessary to divide it into sections. We believe that the professor should always take part in the manikin instruction; and if it becomes necessary to divide the class, he should alternate between the sections.

4. LABORATORY WORK.

We consider it imperative that laboratory work should be included in the obstetric course. As already indicated, it is impossible for the student to grasp the subject intelligently, unless he be more or less intimately acquainted with the minute structure of the organs of generation, and with the lesions associated with the various diseases, which may complicate the pregnant and puerperal condition.

Of course, many of these subjects are studied during the first and second years in the courses upon histology and pathology; but owing to the immense field, which must be covered in each of these branches, it is impossible to more than touch upon salient points, which are soon forgotten. It is therefore necessary that this field should be gone over again more in detail and with especial reference to the practical side of obstetrics, and this can only be done by one, who is particularly interested in this branch of medicine.

This work should be delegated to a special assistant, whose duty it should be to prepare the material for the class, and, with

the aid of others, to demonstrate it to them. While this work is going on, the class should meet twice a week for one and a half to two hours. On meeting, the sections should be given to the students, who must stain, mount, and study them. At the next meeting, they should be described by the instructor, who should then go around the class and ascertain that the necessary points have been made out by each student. Experience has shown that not more than four or five sections should be given out in any one week.

This work should be begun at the commencement of the year, and the normal anatomy of the genitalia and the development of the placenta thoroughly studied. When this is accomplished, the same hours should be devoted to manikin work, and after its completion, the pathology of obstetrics should be taken up. In this way, two meetings a week of one and a half to two hours each may be occupied profitably throughout the year.

If the class exceeds 40 or 50 in number, it will be necessary to divide it into sections of convenient size.

This work, of course, will not necessarily require special laboratory accommodations, for it may be done in the histologic, pathologic, or clinical laboratories as may be most convenient.

In the following list are mentioned the specimens, which may be studied profitably in this manner. Where it is found to be too comprehensive, the specimens which are marked with an asterisk may be omitted.

1. Labia majora and minora.
2. Vaginal mucosa.
3. Longitudinal section of cervix, showing transition from cervical to vaginal epithelium.
4. Transverse section of cervical canal, showing its arborescent structure.
5. Endometrium of young girl.
6. Endometrium of adult.
7. Endometrium of old woman.
8. Pregnant uterus, showing increase in size of muscle cells.
9. Involuted uterus, showing decrease in size of muscle cells and degeneration of vessels.
10. Menstruating uterus.
11. Uterine end of Fallopian tube.
12. Central part of Fallopian tube.

13. Lateral end of Fallopian tube.
14. Round ligament.
15. Ovarian ligament.*
16. Infantile ovary.
17. Girl's ovary.
18. Adult's ovary.
19. Senile ovary.
20. Corpus luteum, fresh.
21. Corpus luteum, eight to ten days old.
22. Corpus luteum, two to four weeks old.
23. Corpus luteum of pregnancy.
24. Ovary showing corpora fibrosa.
25. Ovary showing atresic follicles.
26. Corpus luteum cyst.*
27. Decidua, four to six weeks.
28. Decidua, four months.
29. Decidua reflexa (from abortion).
30. Early chorion, to show double layer of epithelium.
31. Placenta three months.
32. Placenta four months, if possible in connection with the uterine wall.
33. Normal placenta at term.
34. Normal placenta at term injected.
35. Young umbilical cord, fetal end to show stalk of umbilical vesicle.
36. Umbilical cord at term.
37. Inflammation of decidua.*
38. Early placental infarct.*
39. Developed placental infarct.*
40. Hemorrhagic placental infarct.*
41. Normal fetal epiphysis.
42. Syphilitic fetal epiphysis.
43. Syphilitic placenta, fresh, tease out chorionic villi. Compare with normal.
44. Syphilitic placenta, hardened.
45. Hydatidiform mole.*
46. Tubal pregnancy, to show decidual and placental formation.
47. Rachitic bone.
48. Osteomalactic bone.*
49. Eclampsia, kidney.
50. Eclampsia, liver, to show necrosis.
51. Eclampsia, lung, to show placental giant cells.
52. Puerperal infection, showing streptococci limited to decidua.
53. Puerperal infection, showing streptococci in the uterine wall.
54. Puerperal infection, showing streptococci in the broad ligament.
55. Puerperal infection, showing non-involvement of the mucosa of Fallopian tube.

56. Puerperal infection, due to streptococci and putrefactive organisms.
57. Puerperal infection, due to putrefactive organisms alone.

It is apparent that any one who has carefully studied the sections just mentioned will have a far better and more lasting conception of obstetrics than one who has not.

In addition to the normal anatomy, he will have precise and accurate information upon the ordinary diseases of the placenta and will be able to diagnose fetal syphilis by the examination of the placenta and the fetal bones.

He will learn, for example, that the hydatidiform mole is not merely a myxoma of the chorionic villi, but that it presents marked changes in its epithelium, which places it in close relationship to the malignant growths, about which so much has been written lately; namely, the deciduoma malignum or syncytial carcinoma. He will also learn the true nature of rachitis and osteomalacia, and thus more readily understand the genesis of certain varieties of deformed pelvis. By studying the tissues from a case of eclampsia, he will learn that it is a disease not merely of renal origin, but that it is accompanied by lesions in the liver and other organs, which place it in a totally different light. The examination of sections from the various varieties of puerperal infection, will afford most important indications for treatment, and teach the futility of curetting the uterus in cases of streptococcus infection, and the marked benefit to be derived from the same operation in those forms due to infection with putrefactive and other organisms.

These and many other benefits will accrue from the study of obstetrics in this manner, and we feel that its importance cannot be urged too strongly upon the teachers of obstetrics.

5. DEMONSTRATIONS.

Demonstrations should also play an important part in obstetric teaching. They should serve partly for the illustration of lectures and frequently be given independent of them.

Every teacher should exert himself to obtain as many objects as possible, which are suitable for demonstration. Many can only be collected gradually, such as frozen sections of the fetus and young children of various ages for demonstrating the fetal and infantile pelvis and the relations of the generative organs,

series of ova at various periods of development, placental diseases and abnormalities, and many other anatomic and pathologic specimens.

Among the various aids for teaching, which can be bought at any time, we may mention: Tramond's three specimens of dissections of the female perineum and pelvic floor, which greatly facilitate the demonstration of this difficult subject; Tarnier's bronze pelvis, manufactured by Collin, of Paris; Edgar's aluminum pelvis and blackboard, manufactured by Reynders, of New York; Edgar's models of the pregnant uterus at the several months of pregnancy, also manufactured by Reynders. These models are of great value, in that they enable us to give the student an accurate conception of the exact size of the uterus at each month of pregnancy. Edgar's casts illustrating the immediate repair of the lacerated perineum are also very valuable, while his leather uterus is a useful adjunct to the manikin, and enables us to teach the student how to pack the uterus with gauze to check hemorrhage and to sew up the lacerated cervix for the same purpose.

One of the greatest aids in teaching, especially in this country, where certain forms of contracted pelvis are rarely observed, is the series of 24 models of the various forms of deformed pelvis, prepared by Tramond of Paris. All of them are modeled exactly after celebrated examples of pelvic deformity in the various museums of Europe. An appliance, which is invaluable for demonstrating the genesis of the various forms of deformed pelvis, is the pelvis in "composition molle" manufactured by Tramond, which can be given any shape by the hands.

This list might be extended almost indefinitely, but we have referred only to such models and appliances as we consider essential.

Any one interested in this line of work is referred to the interesting article by Dr. J. C. Edgar in the November and December numbers of the *New York Medical Journal* for 1896.

6. WARD CLASSES.

For teaching the technique of examining pregnant women, the class should be divided into small groups, whose size must

depend upon the amount of clinical material available. Each student should be carefully drilled in principles of asepsis, taught to diagnose the position and presentation of the fetus by abdominal palpation and vaginal touch, impressed with the necessity of measuring the pelvis both externally and internally in every case, etc. They should also be required to take the histories of the patients in the ward, to make the necessary urinary examinations, and to accompany the professor or the resident obstetrician in the daily visit.

They should also be required to examine the puerperal women just before they are discharged from the hospital, so as to become acquainted with the condition of the genitalia in the latter part of the puerperal period.

Each student should be required to examine at least ten pregnant women, not including the cases seen during labor, before being allowed to come up for the final examination in obstetrics.

7. DELIVERY OF PATIENTS IN THE LYING-IN WARD.

A small number of students, preferably two, but certainly not more than four, should be called to the ward to see every case of confinement. They should be required to examine the patient, both internally and externally, once during the first and again during the second stage of labor. In uncomplicated cases, one of the group should deliver the woman himself, under the guidance of a competent assistant.

A much larger number of students may be called to operative cases as onlookers. Each student should be required to see at least five cases delivered in the lying-in ward; for it is only there that he can learn the ideal method of conducting a labor case. A service of 150 cases yearly will be sufficient for a class of 100 students, providing four students are called to each class.

8. DELIVERY OF PATIENTS IN THE OUT-PATIENT DEPARTMENT.

An obstetric dispensary should be organized in connection with every medical school, and poor women delivered at their own homes by the students under the personal supervision of an assistant.

The custom of sending two students alone to a labor case, is to be strongly deprecated; for they are almost certain to fall at

once into slipshod methods and fail to carry out the more or less rigorous technique, which they have learned in the lying-in ward. But when they are sent to these cases under the charge of a competent assistant, who is prepared to demonstrate the case and to see that the rules of asepsis are strictly followed, we believe that the out-patient obstetric service will be quite as useful in training students as the lying-in ward, and perhaps more so, in that it teaches them to conduct a labor aseptically under all the disadvantages which are encountered in the homes of the poor, almost as well as in the ward with all its conveniences, and thus are fitted directly for private practice.

The student should be required to visit the patient during the puerperium, say for the first five days and again on the seventh and tenth days, and should be provided with a fairly full printed history sheet, in which he should be required to outline the more important facts concerning the case, which should be given to the assistant in charge after the last puerperal visit.

It should be understood that the instructor regards the return of the history sheet as an important matter, and that the manner in which it is filled out should play an important part in determining the final standing of the student. We consider that two cases carefully observed in this manner are quite as valuable to the student, as ten cases seen in the usual way without supervision. Each student should be required to attend at least five out-patient cases; and a service of 250 cases a year would be sufficient to furnish cases for a class of 100 students.

In large cities, a considerable part of the out-patient obstetric material is lost for the purposes of clinical instruction by the time consumed in getting the student to the case, especially when he lives a considerable distance from the hospital. To obviate this difficulty, one or more rooms should be provided by the department, according to the size of the service, in which two or more students should be kept on call at night, until they have seen their quota of cases.

9. CLINICAL CONFERENCES.

During the fourth year there should be a weekly meeting of the class, in which most of the teaching should be done by the

students themselves. Here the interesting cases which have been observed by the students are discussed. A student, who has lately seen an interesting case, should be informed a day or so in advance that he is expected to report upon it. When the class meets, he should read a concise history of the case, and then perform upon the manikin the operation which may have been required. The case is then discussed by the instructor, and the class questioned concerning more or less cognate cases.

At another meeting, a dead born child and its placenta may be exhibited. Two students may be called upon to perform an autopsy upon the child and to ascertain its cause of death; to a third student the placenta may be given, with instructions to tease out some villi, examine them under the microscope, and ascertain if they present syphilitic lesions. This will consume about half an hour. Then the diagnoses are called for, and the history read by the student, who observed the case, and it is attempted to bring the clinical history into accord with the anatomic findings and *vice versa*.

At another meeting, several ova of various ages may be given to as many students, who should carefully examine them and then report what stages of development they represent, and their reasons therefor.

Another very practical manner of spending the hour, is to take three deformed pelves and give each one to a group of students with a pelvimeter and a piece of paper. Allow them 15 minutes to measure each pelvis. Then call upon one student in each group for the diagnosis, his reasons for making it, and the measurements upon which it is based. And ask the other how he would diagnose a similar pelvis in the living woman, and what procedures he would adopt to deliver her, etc.

Of course, this kind of work may be amplified to almost any extent, and is only limited by the amount of time and material at the disposal of the instructor.

A course conforming more or less closely to the one just suggested is given at the Johns Hopkins Medical School, extending through the third and fourth years, as follows:

Daily meeting of the class during the third year:

Monday, lecture, one hour.

Tuesday, laboratory or manikin work, one and a half to two hours.

Wednesday, lecture, one hour.

Thursday, lecture, laboratory or manikin work, one and a half to two hours.

Friday, recitation, one hour.

Fourth year:

Clinical conference for the entire class, one hour weekly.

Students divided into small groups for ward classes, and into still smaller groups for seeing cases in the lying-in ward and the out-patient department.