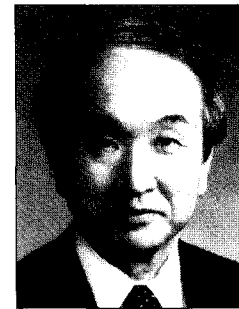


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Tsunehisa Makino

Tokai University, Japan



- 2003 Director
Center for Perinatology, School of Medicine, Tokai University
- 2001 Director and Chairman, Department of Obstetric and Gynecology, Center for
Growth and Reproductive Medicine, School of Medicine, Tokai University
- 1995 Professor and Chairman, Dept. of Obstetrics and Gynecology, School of Medicine,
Tokai University
- 1978 Assistant Professor, Dept. of Obstetrics and Gynecology, School of Medicine, Keio
University
- 1973 Associate Professor, Dept. of Obstetrics and Gynecology, Tokyo Dental College
- 1972 Assistant Professor, Dept. of Obstetrics and Gynecology, Harvard Medical School
- 1971 Associate, Dept. of Obstetrics and Gynecology, Harvard Medical School
- 1970 Research Fellow, Dept. of Anatomy, Laboratory of Human Reproduction and
Reproductive Biology, Harvard Medical School, U.S.A.
- 1969-1970 Postdoctoral Fellow, Dept of Obstetrics and Gynecology, Keio University, School of
Medicine
- 1969 Ph.D. Keio University, Tokyo, Japan
- 1965-1969 Clinical Research Fellow, Dept. of Obstetrics and Gynecology, Keio University,
School of Medicine
- 1965 National Board of Medical Examination (Registered No. 187877)
- 1964-1965 Rotating Intern, Keio University Hospital
- 1964 M.D. Keio University, School of Medicine, Tokyo, Japan
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Congenital Uterine Malformation and Assisted Reproductive Technology

Tsunehisa Makino, M.D., Ph.D.

Department of Obstetrics and Gynecology, School of Medicine, Tokai University, Kanagawa, Japan 259-1193

SYNOPSIS: Out of 2,061 hysterosalpingographies on the female partners with a history of recurrent pregnancy loss, 278 congenital uterine anomalies (13.5%) were detected. In these anomalies, approximately 60% were arcuate uterus and 30% were partial septate uterus, however incidences of spontaneous abortion were equally higher as compared to those in normal pregnancy without anomaly. Histological findings revealed that vascular system was significantly poor in the septum and uterine fundus muscle layer of congenital uterine anomaly. Following these basic findings, ideal metroplastic surgery has been performed for the patients with anomaly. Before the metroplasty, 173 patients with the anomaly experienced 427 (93.2%) miscarriages out of 458 pregnancies. The post operative abortions were significantly reduced into 12.5%. This post-operative pregnancy loss is also significantly lower as compared to that of the randomized un-operated control group with the anomaly.

Fusion of the Mullerian ducts, which develop into a single reproductive tract in the human, is induced at three different embryonal levels over three different periods of time. Therefore, a number of uterine malformations can easily develop.

We have been indicating that congenital uterine malformation, antiphospholipid antibody syndrome and chromosomal abnormality of the couples are 3 major etiologic causes detected in the couples with a history of recurrent pregnancy loss. In this study, we investigated the incidence of congenital uterine malformations, basic mechanism to induce recurrent pregnancy loss, development of ideal metroplastic surgery upon this basic findings and the prognosis after this surgery.

SUBJECTS AND METHODS: Four thousands couples who visited our infertility clinic with a history of recurrent spontaneous abortions were routinely examined and possible etiologies of recurrent pregnancy loss were investigated. A method for evaluating uterine anomaly was introduced with respect to the hysterosalpingographies of these patients. The X/M ratio, length of the uterine cavity longitudinally versus the dent of the uterine fundus found on hysterosalpingography, was utilized for evaluation of each uterine deformity. Histological study on the uterine vascularity for both normal and the uterus with congenital anomaly has been performed by applying CD34 staining for a marker of blood capillary distribution. Upon this basic investigation, ideal metroplastic surgery has developed. Three months after this metroplasty, the patients were allowed to conceive and the outcome of post-operative pregnancy was evaluated with that of pre-operative history. To evaluate the efficacy of this surgery on the subsequent gestational course more precisely, another group with uterine anomaly not treated by metroplasty were randomly selected as a control group, and their

subsequent pregnancies were monitored.

RESULTS: Two thousands and sixty one hysterosalpingographies on the female partners with a history of recurrent pregnancy loss registered in our clinic were performed and 278 congenital uterine anomalies (13.5%) were detected. Analyzing these anomalies, 61.2% were arcuate uterus and 32.2% were partial septate uterus, however incidences of spontaneous abortion were equally higher (97.5-100%) as compared to that of normal pregnancy without anomaly. Basic histological investigation using CD34 staining indicated significantly poor vascular distribution in the septum and uterine fundus muscle layer. Our newly developed and modified metroplastic surgery has been performed on 173 patients with the anomaly who experienced 427 pregnancy losses, indicating 93.2% of abortion rate, out of 458 pregnancies. The post-operative evaluation indicated that this metroplasty significantly reduced spontaneous abortion rate into 12.5%. In contrast, 94.4% of subsequent pregnancies in the 47 randomly selected control women of control group with anomaly but operated were found to terminate spontaneously before 12 weeks of gestation.

DISCUSSION AND CONCLUSION : In general, anomalies of the female genital tract are not very common as being reported in only 0.5-2.0% frequency. However, the incidence of these anomalies has been reported to be more higher among the patients with a history of recurrent fetal wastage. In this study, 278 congenital uterine anomalies were detected among 2,061 recurrently aborting couples, indicating 13.5% of the incidence. Most cases of congenital uterine anomaly remain undiagnosed until difficulty for maintenance of pregnancy was experienced. The present study also demonstrated that most congenital uterine anomalies entail an insufficient blood supply to the most vital uterine muscle layer for the intrauterine fetal development. We developed an ideal metroplasty with surgical resection of the ischemic part of the uterine cavity, reconstructing a new uterine cavity and establishing a normal cross-anastomosis of the uterine vessels. This newly developed surgical procedure can be highly evaluated because of its favorable efficacy by significantly reducing the pregnancy wastage from 85.5% to 12.5% in the 173 surgically managed women with congenital uterine anomaly.

The present study also indicates that precise etiologic diagnosis on unsuccessful pregnancy in IVF-ET program is essential and appropriate surgical procedure could improve gestational prognosis in assisted reproductive management.

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