SYMPOSIUM FETAL SURGERY IN LATIN AMERICAN COUNTRIES

1. Fetal Diagnosis and Therapy Unit, Dominican Fetal Center, Centro Médico Docente Siglo 21, San Francisco de Macoris, Dominican Republic
a. ORCID 0000-0002-4020-5794
b. ORCID 0009-0001-7235-6474

Conflicts of Interest: No conflicts of interest

Funding: Self-funded

Received: 18 December 2023

Accepted: 11 January 2024

Online publication: 2 April 2024

Autor corresponsal:
Ramiro Jesús Diaz-Primera
Calle Duarte Número 25, San Francisco de Macoris, República Dominicana Código Postal 31000
dr.ramirodiaz@gmail.com

Cite as: Diaz-Primera RJ, Mogena-Sánchez O. Fetal therapy in the Dominican Republic: perinatal view. Rev peru ginecol obstet. 2024 ;79(1). DOI:**https://doi.org/10.31403/rpgo.v70i2598**

Fetal therapy in the Dominican Republic: perinatal view

Terapia fetal en República Dominicana: visión perinatal

Ramiro Jesús Diaz-Primera[1,a], Orlando Mogena-Sánchez[1,b]

DOI: https://doi.org/10.31403/rpgo.v70i2598

ABSTRACT

Some 10% of pregnancies will qualify as high obstetric risk and will present some maternal or fetal complication. In the Dominican Republic, with a birth rate of 166,938 in the year 2022, many of these births merit the participation of a maternal-fetal medicine team. The need to form a physical and human fetal therapy unit is becoming more visible every day in all countries in the world. The Dominican Republic has not been the exception, having managed to form the Dominican fetal medicine team, with a multidisciplinary perinatal vision of integration of maternal fetal medicine and pediatric subspecialties in a single team. Considering the economic rates of our Latin American countries, excluding a country from this service forces the patient to search international treatment, representing a limitation for a very vulnerable population. Thanks to the Dominican medical commitment and its public and private authorities, today Dominican fetal surgery is advancing under the banner 'Health for our people, from our people'.

Key words: Fetal therapies, Multidisciplinary research, Surgery, fetal

RESUMEN

Un 10% de los embarazos calificarán durante su evolución como alto riesgo obstétrico y presentarán alguna complicación materna o fetal. En República Dominicana, con una tasa de 166,938 nacimientos en el año 2022, muchos de ellos ameritaron la participación de un equipo de medicina materno fetal. La necesidad de formar una unidad física y humana de terapia fetal se hace cada día más visible en todos los países del mundo. República Dominicana no ha sido la excepción, habiéndose logrado formar el equipo de medicina fetal dominicana, con visión perinatal multidisciplinaria de integración de la medicina materno fetal y las subespecialidades pediátricas en un solo equipo. Considerando los indices económicos de nuestros países latinoamericanos, excluir a un país de este servicio obliga al paciente a buscar tratamiento internacional, representando una limitación para una población muy vulnerable. Gracias al compromiso médico dominicano y de sus autoridades públicas y privadas, hoy día la cirugía fetal dominicana avanza con el abanderado 'Salud para los nuestros, desde los nuestros'.

Palabras clave. Terapias fetales, Investigación multidisciplinaria, Cirugía fetal

Introducción

Approximately 10% of pregnancies correspond to high obstetric risk because they will present some perinatological complication, either maternal or fetal. In the Dominican Republic, from 166,938 births in the year 2022[(1)] about 16,693 pregnancies required the participation of a maternal-fetal medicine team at some point. Thanks to the growth in knowledge and skills in prenatal diagnosis and management, the imminent need to form a physical and human fetal therapy unit arose in the world; the Dominican Republic was no exception, and the Dominican fetal medicine team was formed.

The birth rate of Latin American and Caribbean countries for 2021 was 15 per 1,000 inhabitants[(2)]. Considering these demographic figures and the published historical controls of incidence for each pathology susceptible to fetal surgery, we know that annually in Latin America a large number of cases can benefit from intrauterine fetal therapy, with a proper diagnosis and meeting the criteria of fetuses candidates for treatment. Of these cases, about 35 fetuses with pathologies susceptible to fetal therapy would receive treatment in the Dominican Republic annually, with timely diagnosis and referral. The projected casuistry

is distributed as follows: 5 cases of obstructive uropathies, 3 cases of congenital diaphragmatic hernia, 2 of amniotic band syndrome, 8 of intergemellar transfusion syndrome, 2 of selective intrauterine growth restriction, 1 of congenital laryngeal atresia, 5 of congenital pulmonary and airway malformation (including its hybrids), 1 of giant chorioangioma, 1 of sacrococcygeal teratoma, 7 of spina bifida. Many of these pathologies have a perinatal mortality rate close to 100%, while the others produce sequelae and limitations in the children's motor and functional development of great impact. Until a few years ago, only limited efforts had been made to help these fetuses because there was no access to local fetal surgery, leaving international care as the only option for patients. For travel and treatment, only 1% of the affected population had the resources for international insurance coverage or the financial means to cover these expenses.

Training of the human resources of the Dominican fetal therapy unit and maternal fetal support - Training of maternal fetal medicine schools

The formation of human resources duly trained and selected, and with directed trainings, allowed the following advances in the structure: standardization in the formation of maternal-fetal medicine schools - management format, protocols and ultrasonographic follow-up.

The development of a standardized format in academic training and clinical approach, as well as protocols for the development of interconsultation, management and ultrasound reports, allows for easy understanding, approach and follow-up of the patient. If the patient is transferred from one maternal-fetal medicine unit endorsed by our group to another (located in another city), it ensures compliance with the previously planned assessment and consultation schedule and avoids multiple pharmacological treatments that can often be left unfinished between the change from one care center to another, thus jeopardizing the objective of this.

Perinatal health

The multidisciplinary fusion in a single team (Maternal fetal medicine and Pediatrics) with a focus on prenatal and postnatal approach allows pre-surgical counseling with a more accurate approach for patients, especially in the prenatal process and for at least the following 12 months of the postnatal. This method decreases maternal anxiety and stress about the uncertainty of birth plans and postnatal follow-up, as well as the creation of a doctor-patient relationship with the pediatric and pediatric subspecialty team, who will be in charge of postnatal treatments[2].

National prenatal referral network

The creation of a medical assistance network with telephone, web and interpersonal connection assisted by a coordinator allows the rapid response of the team in any area of the country according to the needs of the patient, where maternal and fetal care is received in a period of less than 24 hours with a work plan to be developed in a protocolized manner[3].

Figure 1. Multidisciplinary team in EXIT procedure (ex utero intrapartum treatment) for cervical lymphangioma. Participating services: gynecology and obstetrics, maternal-fetal medicine, anesthesiology, otorhinolaryngology, pediatric surgery, pediatrics, neonatology, nursing.

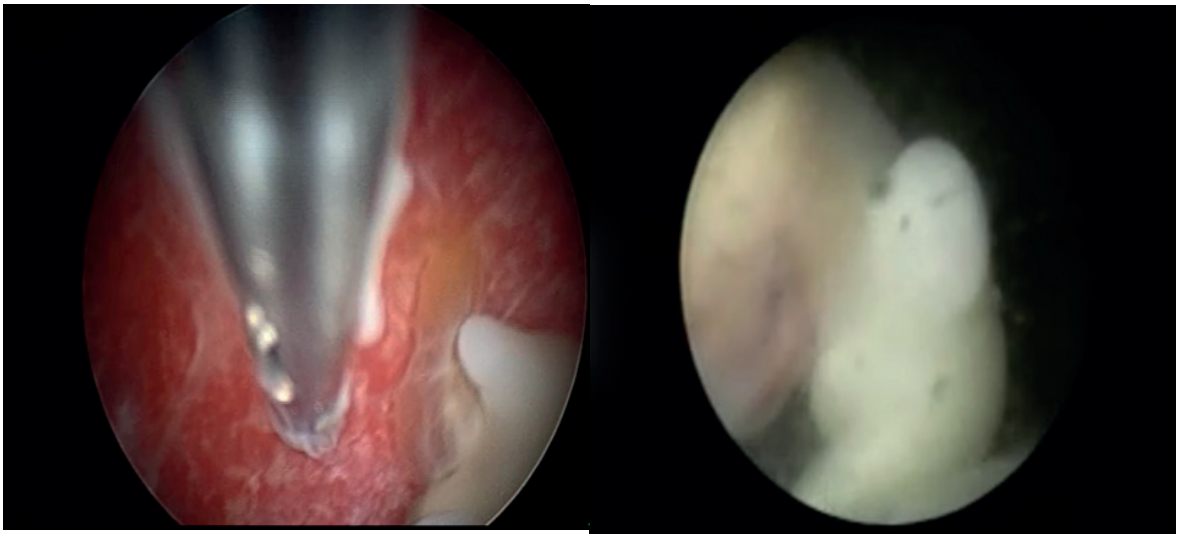
Figure 2. Location of the National Prenatal Reference Network Centers in the Dominican Republic.

Perinatal health from the first trimester of gestation

Embryoscopies

Perinatal health and fetal therapy have been focused for many years on neonatal survival. However, the appropriate combination of the use of endoscopy, ultrasound and genetics has also made it possible to respond to cases of early gestational loss that for many years were placed in a group of unknown causes. Today, by means of the technique of embryoscopy performed by means of a hysteroscope for direct visualization of the embryonic anatomy and embryo sampling before the 10th week of gestation (prior to performing uterine curettage), it has been possible to diagnose causes of losses and anatomical findings that could not have been visualized by ultrasound. In addition, samples of embryo remains had a 22% probability of contamination with maternal genetics, creating confusion in the interpretation of the results[4].

Figure 3. Embryoscopy of 8-week embryos without heartbeat at sonographic evaluation. By taking a sample of the embryos and by means of microarray studies it was possible to obtain information on genetic alterations with severe impact on embryofetal development.



Follow-up of international protocols. International support in the application of new techniques

Fetal therapy centers located in countries with larger populations than ours, with decades of experience that exceed more than 1,000 cases treated, have developed techniques and protocols for fetal surgery that have surpassed the experimental stage and have transformed these techniques into an intrauterine treatment option, with results far superior to those obtained in previous years. Based on this, our work team has had the support of alliance with these centers and their medical directors, following their suggestions and guidelines that have allowed us to replicate their results, leading to increasingly effective and early fetal interventions[5-8].

Conclusion

Fetal surgery has represented a Latin American reality and need for the last 20 years, which has led each country to take the initiative to establish their programs in search of the best perinatal survival for those fetuses susceptible to treatment. The growth and development of the human resources involved in the fetal therapy team, as well as the technological development of each unit, has made it possible to replicate results that a few years ago were only a reality in North America and Europe. Considering the economic indices of our Latin American countries, excluding a country from this service, forcing the patient to seek international treatment, represents a limitation for a very vulnerable

Figure 4. Placement of vesicoamniotic shunt for posterior urethral valve syndrome. a) Fetal bladder prior to shunt placement. b) Vesicoamniotic shunt placed.

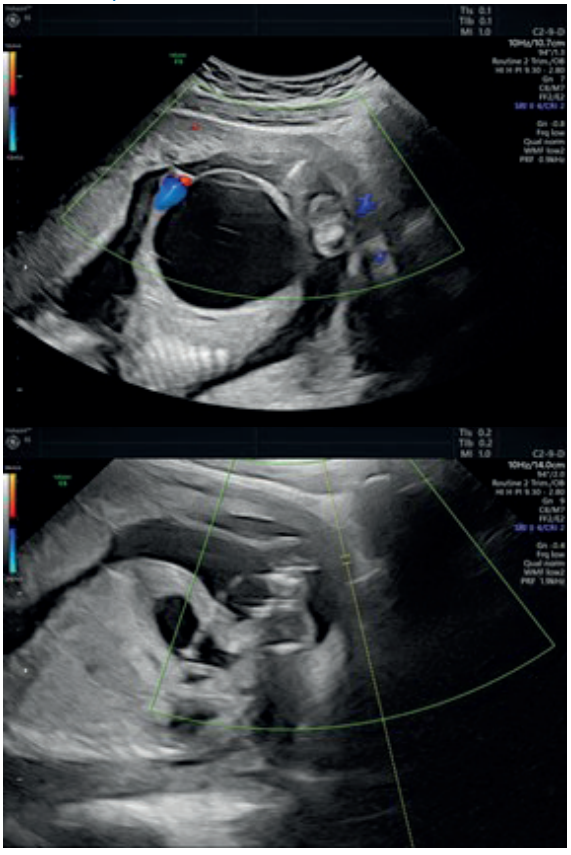
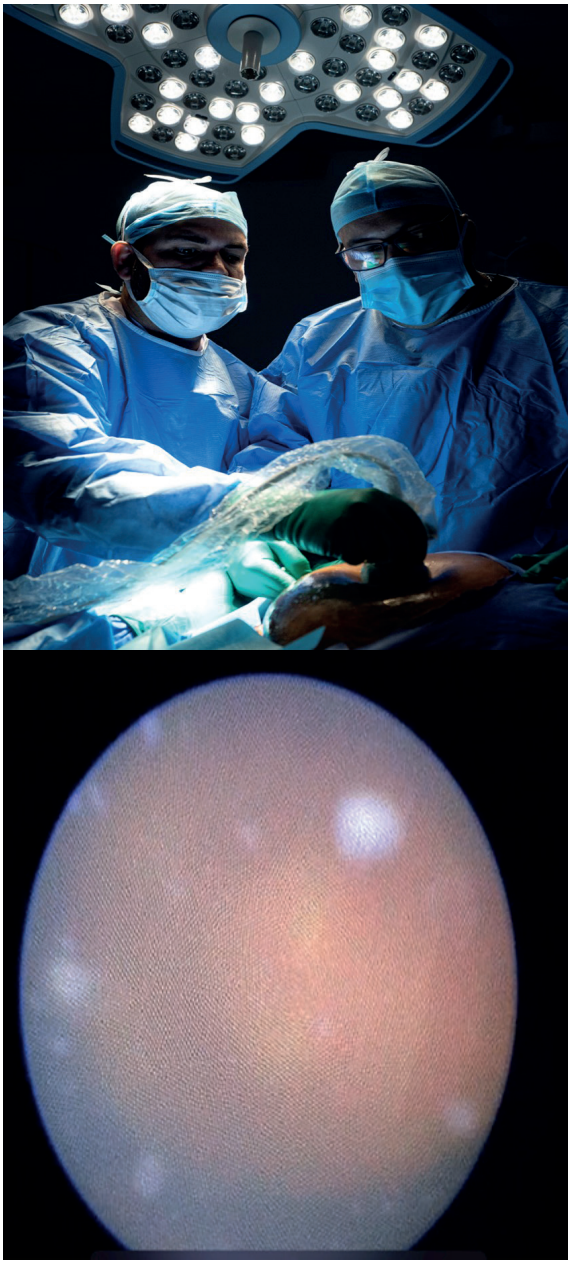


Figure 5. Laser photocoagulation for intergemellar transfusion syndrome.



population. That is why, thanks to the Dominican medical commitment and its public and private authorities, today Dominican fetal surgery and perinatal therapy is advancing with the banner 'Health for our people, from our people'.

Acknowledgment

To all the members and collaborators of the Dominican Fetal Center. As well as to each of the medical institutions that support us.

References

1. Boletin Epidemiológico. Semana Epidemiológica (SE) No. 52. Ministerio de Salud Pública Dirección General de Epidemiología Sistema Nacional de Vigilancia Epidemiológica. República Dominicana, 2022.
2. Banco Mundial. Tasa de natalidad, nacidos vivos en un año (por cada 1.000 personas) - Latin America & Caribbean, Año 2021. https://datos.bancomundial.org/indicator/SP.DYN.CBRT.IN?locations=ZJ
3. Diaz-Primera R, Sánchez-Jimenez R, Marin-Concha J, Mena R, Garrido-Mendez J, Mariñez M, Mena-Rivas R, Lopez A, Diaz-Rodriguez A, Mogena-Sanchez O, Almanzar R, Soto-Ravelo R. Prenatal Diagnosis of Fetal Lymphangioma: A Case Series. J Ultrasound Med. 2022 Apr;41(4):1019-26. doi: 10.1002/jum.15783. Epub 2021 Jul 20. PMID: 34288011.
4. Mogena-Sánchez O, Crespo A, Tejada A, Trinidad A, Espinal V, Rodríguez S, Pérez Wischnienski J, Díaz-Rodríguez A, Sánchez-Jiménez R, Diaz-Primera R. National importance of the maternal fetal medicine diagnostic network in the management of monochorionic twin pregnancies. 10 World Congress of Perinatal Medicine in Developing Countries. 01-05 June, 2022. Punta Cana, Dominican Republic.
5. Diaz Primera R, Gil Guevara E, González Arias F, Bermúdez González C. Iniencephaly Apertus: Prenatal Autopsy by Sonography and Embryoscopy. J Ultrasound Med. 2017 Oct;36(10):2188-9. doi: 10.1002/jum.14279. Epub 2017 Jun 8. PMID: 28593711.
6. Cruz-Martínez R, Díaz R, Martínez-Rodríguez M. Early release of amniotic bands using a 1.0-mm fetoscope. Am J Obstet Gynecol. 2021 Jun;224(6):620-1. doi: 10.1016/j.ajog.2021.02.019. Epub 2021 Feb 19. PMID: 33617799.
7. Cruz-Martínez R, Chavelas-Ochoa F, Martínez-Rodríguez M, Aguilar-Vidales K, Gámez-Varela A, Luna-García J, López-Briones H, Chávez-Vega J, Pérez-Calatayud ÁA, Díaz-Carrillo MA, Ahumada-Angulo E, Castelo-Vargas A, Chávez-González E, Juárez-Martínez I, Villalobos-Gómez R, Rebolledo-Fernández C. Open Fetal Microneurosurgery for Intrauterine Spina Bifida Repair. Fetal Diagn Ther. 2021;48(3):163-73. doi: 10.1159/000513311. Epub 2021 Feb 12. PMID: 33582666.
8. Peiro JL, Crombleholme TM. Error traps in fetal surgery. Semin Pediatr Surg. 2019 Jun;28(3):143-50. doi: 10.1053/j.sempedsurg.2019.04.012. Epub 2019 Apr 25. PMID: 31171149.