Selective Fetal Growth Restriction in Monochorionic Twin Pregnancy: A Review of Current Literature on Diagnostic and Therapeutic Updates

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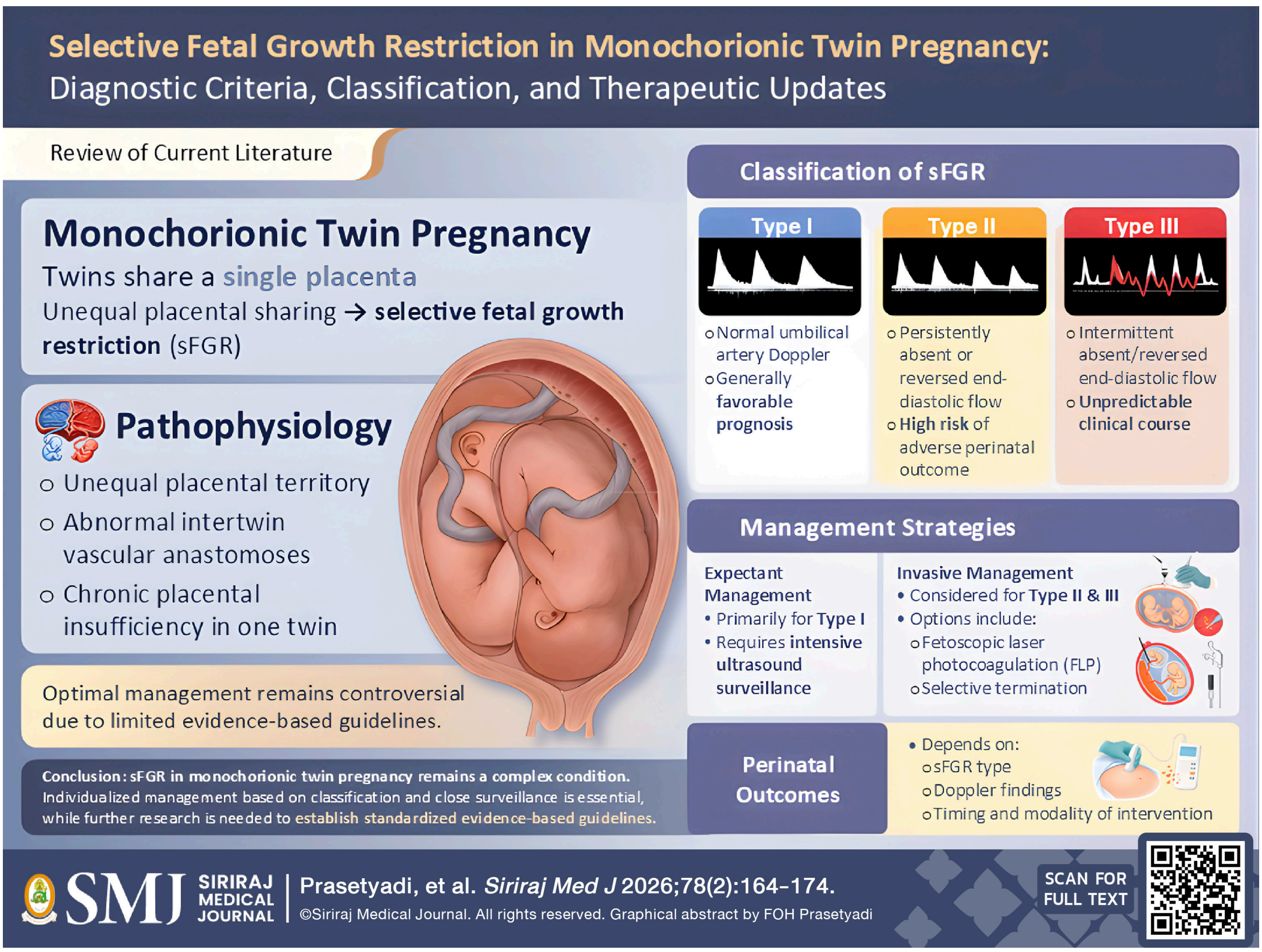

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ABSTRACT

Monochorionicity refers to the condition in which twins share a single placenta. Selective fetal growth restriction (sFGR) in monochorionic (MC) twin pregnancy poses significant challenges due to its association with high risks of perinatal mortality and morbidity. Managing sFGR poses a particular challenge, as affected pregnancies require more frequent monitoring compared to uncomplicated singleton or twin pregnancies. Expectant management is typically applied for type I cases, which generally have favorable outcomes. In contrast, more severe cases (type II and III) may require invasive management, such as fetoscopic laser photocoagulation (FLP) or selective termination. However, how to best manage this complicated pregnancy remains debated, as no evidence-based guidance is currently available. This review aims to summarize the underlying pathophysiology, various diagnostic criteria, classification systems, and current management strategies for sFGR. These include the perinatal outcomes associated with expectant and invasive management in sFGR.

Keywords: Selective fetal growth restriction; monochorionic twin pregnancy; twins; birthweight discordance; fetal therapy (Siriraj Med J 2026;78(2):164-174)

INTRODUCTION

Monochorionic (MC) twin pregnancies account for approximately 30% of all twin pregnancies, with two-thirds of those MC twin pregnancies being monochorionic diamniotic (MCDA).[1] MC refers to the presence of a shared placenta between the twins, which is associated with significantly higher perinatal morbidity and mortality compared to dichorionic (DC) twins.[2] Several adverse perinatal outcomes are mainly attributable to complications related to MC, such as selective fetal growth restriction (sFGR).[3-6]

sFGR is characterized by discrepant growth between twins, resulting from unequal placental sharing.[4,5] The natural history of sFGR is influenced not only by its unique placental distribution but also by vascular anastomosis between the two fetuses.[7-9] sFGR ranges between 12 and 25% in MC twin pregnancies, depending on the diagnostic criteria.[4,6,9] More recent literature states that this particular complication occurs in approximately 10-15% of cases.[5,10]

Several adverse perinatal outcomes could result from sFGR, such as intrauterine fetal demise (IUFD), preterm birth (PTB), neonatal death (NND), and neurodevelopmental impairment (NDI).[3-6] Managing sFGR poses a certain challenge, as affected pregnancies require more frequent monitoring compared to uncomplicated singleton or twin pregnancies.[7,9,11] Moreover, if the sFGR dies in utero, the usually co-twin may suffer from brain damage or death in utero too. Proper management is necessary to avoid sFGR or prevent adverse events in the co-twin. A recent survey also highlighted significant variations in diagnosing and managing sFGR in MC twin pregnancies, emphasizing the urgent need for standardized guidelines.[12-14] Therefore, this review aims to discuss current practices in diagnosing and managing sFGR in MC twins, as well as address the ongoing lack of consensus and recommendations for optimal management in achieving better perinatal outcomes for sFGR in MC twin pregnancies.

Methodology

A comprehensive literature review was conducted following an extensive search of electronic databases, including PubMed/MEDLINE, Scopus, and Web of Science. The search strategy was performed using different combinations of keywords: selective fetal growth restriction, monochorionic, twin, and pregnancy. Studies published in a wide range of date publication that investigating the efficacy, safety, and perinatal outcomes of both expectant or invasive management for sFGR were also considered. Additionally, guidelines such as the Royal College of Obstetricians and Gynaecologists (RCOG), American College of Obstetricians and Gynecologists (ACOG), and International Society of Ultrasound in Obstetrics and Gynecology (ISUOG) were consulted to ensure comprehensive coverage of current recommendations and best practices in sFGR management.

Definition and Diagnostic Criteria of sFGR

Using varying criteria for diagnosing sFGR poses a challenge when conducting comparative studies to establish evidence-based management guidelines. Khalil et al. in 2016 define sFGR based on estimated fetal weight (EFW), where EFW is below the 10th centile for DC twins and both of EFW below the 10th centile with discordance of at least 25% for MC twins.[15] Experts then in 2019 have reached a consensus on sFGR diagnosis in MC twin pregnancies criteria based on one of the following: (1) EFW of one twin below the 3rd centile or (2) at least two of the following four criteria: EFW of one twin below the 10th centile, abdominal circumference (AC) of one twin below the 10th centile, EFW discordance more than equal to 25%, or an umbilical artery pulsatility index (UA-PI) of the smaller twin above the 95th centile.[16] More recently, in January 2025, the previously reported guideline updated the consensus with the same diagnostic criteria, along with reaffirmation of the importance of ultrasound examination and monitoring in twin pregnancies to detect sFGR early.[17] Table 1 summarizes the practical guidelines and clinical consensus updates for the diagnostic criteria of sFGR.

The widely accepted classification of sFGR was proposed by Gratacós et al. in 2007, which divides sFGR into three types based on the umbilical artery (UA) Doppler findings of the smaller twin or co-twin. Type I is when there is positive end-diastolic flow (EDF) of both twins, type II is when there is persistent absent or reversed end-diastolic flow (AREDF) of the co-twin, and type III is when there is intermittent AREDF of the co-twin.[14]

Pathophysiology of sFGR

The pathophysiology, diagnosis, and classification of sFGR are illustrated in Fig 1. The majority of MC twins have placental vascular anastomoses, including arterio-venous (AV), arterio-arterial (AA), and veno-venous (VV). Unequitable placental sharing and intertwin vascular connections can lead to disparities in fetal nutrient and oxygen supply, contributing to sFGR.[16,18,19] This complexity is commonly associated with velamentous or eccentric umbilical cord insertion in the growth-restricted fetus and can be readily confirmed by a postpartum placental angioarchitecture study.[7] These findings influence the natural history of the smaller twin and explain why it differs from that of FGR in singleton pregnancy and DC twins.[16,20]

The degree of placental territory (PT) discordance and the number and types of vascular anastomoses in sFGR determine its clinical picture. The predominant direction and extent of blood flow exchange may impose advantageous or detrimental effects on the smaller twin. Substantial variations exist among similar cases, and thus, similar EFW discordance with the same diagnosis may exhibit varying clinical manifestations and outcomes.[16,21] The greater discordance in placental territory may be attributed to the earlier onset of sFGR, and large AA anastomoses are expected to be more prevalent.[22]

The UA is strongly influenced by intertwin blood flow exchange as reflected in its Doppler flow pattern. This parameter is considered one of the most reliable indicators for assessing the hemodynamic status of a fetus with growth restriction. A characteristic feature of MC twins, in contrast to other types of pregnancies,

TABLE 1. Updated practice guideline and consensus of the diagnostic criteria for selective fetal growth restriction in monochorionic twin pregnancies

Author	Year	Criteria Reference	Diagnostic Criteria
Khalil et al. [14]	2016	EFW	a. DC twins: EFW below the 10th centile b. MC twins: EFW below the 10th centile AND discordance of EFW more than or equal to 25%
Khalil et al. [15]	2019	AC, EFW, and UA-PI	(1) EFW of one twin below the 3rd centile OR (2) At least two of the following four criteria: a. EFW of one twin below the 10th centile b. AC of one twin below the 10th centile c. EFW discordance more than equal to 25% d. UA-PI of the smaller twin above the 95th centile
Khalil et al. [16]	2025	Same as previous	Same as previous with a reaffirmation of the importance of ultrasound examination for early detection of sFGR in twin pregnancies

Abbreviations: AC: Abdominal Circumference; EDF: End-Diastolic Flow; EFW: Estimated Fetal Weight; UA-PI: Umbilical Artery Pulsatility Index

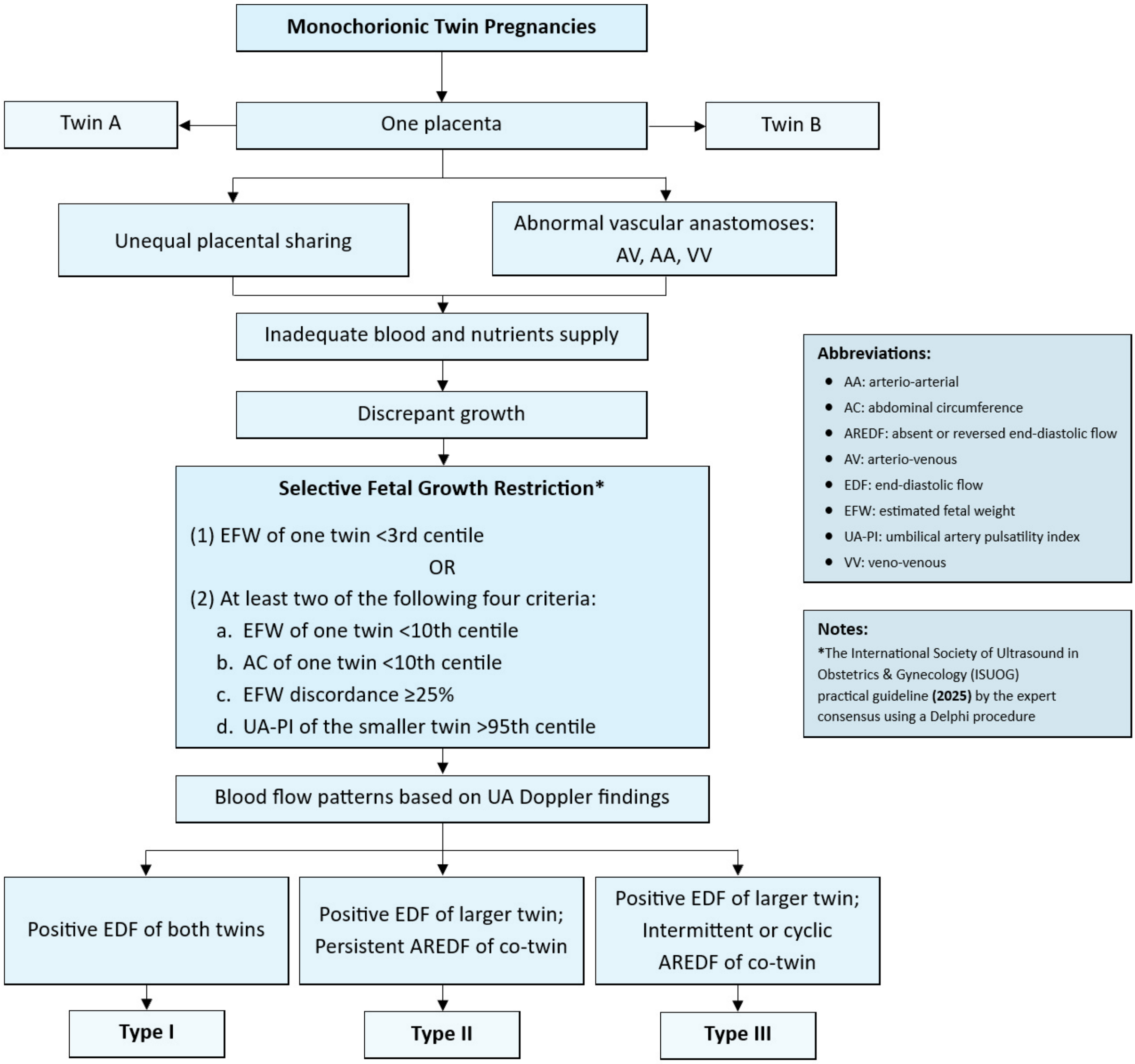

Fig 1. Pathophysiology, diagnosis, and classification of sFGR

is that the Doppler patterns mentioned can be detected very early in gestation and typically persist without significant alterations until delivery.[15] Nevertheless, a study by Batsry et al. indicated that the UA Doppler pattern may change during pregnancy, which can subsequently impact perinatal outcomes.[23]

The configuration of vascular anastomoses varied among the different study cohorts. Type I cases exhibited a proportion of anastomoses similar to that observed in uncomplicated cases. Type II cases demonstrated a lower frequency of large AA anastomoses, whereas type III cases had a significantly higher proportion of AA anastomoses, especially large AAs (more than 2 mm). These findings explain why type I has a good prognosis with a dual survival rate exceeding 90%. In contrast, type II carries the worst prognosis, and type III has an unpredictable outcome with a potentially high risk of intrauterine death.[7,24]

In addition to the more common findings of high PT discordance, large AA anastomoses, and velamentous cord insertion, type III cases also exhibit a higher prevalence of closely positioned cord insertions. In such cases, the smaller twin practically relies upon its blood supply from its co-twin via a large AA anastomosis that functions similarly to an AV anastomosis. This type of anastomosis allows a precarious hemodynamic balance that may potentially lead to episodes of feto-fetal transfusion, which eventually puts both twins at risk of unpredictable demise and brain damage, especially to the larger twin.[7,16,25]

Expectant Management of sFGR

Several factors, such as gestational age (GA) at diagnosis, whether it is early- or late-onset, and parental preferences, should be taken into consideration in making decisions on how to manage this particular complication of MC twins clinically. However, it primarily relies on the findings from Doppler examinations and the specific type of sFGR.[26,27]

Expectant management (EM) involves intensive monitoring through serial ultrasound assessments and Doppler studies to detect fetal compromise. The goal is to prolong gestation while minimizing risks to both twins. The majority of studies recommend weekly outpatient monitoring. More frequent examinations are conducted if any clinical signs of worsening progression are observed.[8,9,28,29]

In addition to fetal biometry, Doppler examination of UA, mid-cerebral artery (MCA), and ductus venosus (DV), as well as assessments of amniotic fluid, bladder visualization, and biophysical profile (BPP), are considered key parameters in the evaluation process.[3-6] Batsry et al. performed non-stress tests twice a week, starting at 32 weeks of gestation for type I cases, continuing until termination of pregnancy at 34-35 weeks.[23] They hospitalized types II and III cases at 26-28 weeks of gestation to allow even closer surveillance. They also routinely carried out fetal brain magnetic resonance imaging (MRI) at 28-30 weeks of gestation and scheduled delivery at 31-32 weeks of gestation.

Systematic reviews have reported variations in diagnostic criteria and management options across studies, as well as other factors that may contribute to potential publication bias, such as small sample sizes, heterogeneous populations, and retrospective or non-randomized study designs.[30-32] Most of the limited number of studies recommend EM for type I sFGR with good clinical outcomes.[33,34] However, in a recent survey exploring how clinicians diagnose and manage sFGR, 79.8% of them would manage early-onset type I cases expectantly. For type II and III cases, 19.3% and 35.7% of clinicians, respectively, would opt for EM.[12]

Perinatal Outcomes Associated with Expectant Management in sFGR

(Prematurity)

It is evident that complicated pregnancies, including sFGR, are often associated with early termination, which increases the risk of prematurity. Prematurity itself poses significant consequences in terms of perinatal mortality and morbidity. The risks of respiratory distress syndrome, neonatal intensive care unit (NICU) admission, cerebral injuries, retinopathy, necrotizing enterocolitis, and sepsis undoubtedly carry significant challenges for clinicians managing sFGR. The risk of death of one or both twins has been reported in studies involving EM, which at the same time provides an opportunity to observe the natural history of the disease.[3,4,7-9]

(Survival Rates)

EM for sFGR in MC twins has resulted in poor perinatal outcomes, especially when UA abnormalities are present. The survival rate of smaller twins ranged from 58% to 89%.[34-37] A small rate of IUFD was also observed for the smaller and larger twins. When categorized into early- and late-onset sFGR, EM of early-onset cases led to lower survival rates for one or both twins. At the same time, the postnatal prognosis remained similar among live-born infants.[28,35]

(Gestational Age at Delivery)

A study of 75 MC twin pregnancies by Aquino et al. reported that type I sFGR cases were diagnosed at a later GA with less discordance in EFW.[29] These cases had significantly later GA at delivery (34.3 weeks) and higher neonatal birth weights when managed expectantly. The mean GA at delivery for type II and type III cases was 27.8 weeks and 28.3 weeks, respectively. Neonatal death was observed at a rate of 1.33%.

Another study by Sobhani et al. evaluated 73 MC twin pregnancies with an EFW discordance of 20% or more.[38] The study found no significant difference in overall adverse pregnancy outcomes between cases that developed sFGR and those that did not. Dual survival did not differ between the two groups, with a mean GA at delivery of 33 weeks. A key finding of the study was that for every additional 10% increase in EFW discordance, the likelihood of developing sFGR was nearly three times higher. However, this association did not reach statistical significance even after adjusting for multiple influential factors.

(Neurodevelopmental Outcomes)

The long-term neurodevelopmental outcomes of complicated pregnancies should not be overlooked, as they have clinical, psychological, and financial implications. EM is currently considered the standard approach for the early stages of any phenotype of complicated twin pregnancy, such as type I sFGR, with intervention considered only if there are signs of progression suggesting an increased risk of demise or disability. Survivors who experienced the loss of a co-twin have been reported to have a 20-26% incidence of neurological impairment.[39,40]

The neurological outcomes in many studies include cerebral palsy and NDI, which is defined as a score below a certain threshold on standard evaluation tools, as well as bilateral deafness or blindness. Brain imaging, either by ultrasound or magnetic resonance imaging (MRI), is typically performed during the neonatal period (i.e., at a corrected GA of 40 weeks) to detect intraventricular haemorrhage (IVH) and cystic periventricular leukomalacia (PVL). [10]

A recent study on the survivors of various complicated MC twin pregnancies- including twin-twin transfusion syndrome (TTTS), sFGR, twin anemia-polycythemia sequence (TAPS), twin reversed arterial perfusion (TRAP) sequence, and single IUFD-concluded that adverse neurodevelopmental outcomes were independent of prematurity.[39] However, in sFGR cases, neurological injury is primarily linked to abnormal Doppler results, sIUFD, and a lower GA at delivery, with an estimated incidence of approximately 10%.[41] Regarding neurological outcomes, EM of severe forms of sFGR showed poor results.[42] Colmant et al. reported that 21% of type II sFGR survivors exhibited NDI at 6 years of age.[36] In a systematic review by Townsend et al., which included 16 observational studies, the risk of IUFD in sFGR pregnancies managed expectantly was reported as 3.1%, 16.6%, and 13.2% for types I, II, and III, respectively. No cases of type I had NND, whereas the NND rates for types II and III were 6.4% and 6.8%, respectively. Survivors without NDI were reported at 97.9%, 89.3%, and 61.9% for types I, II, and III, respectively. These data suggest that type I cases are best managed by EM. At the same time, this led to the consideration of performing invasive procedures for the other types, aimed at improving perinatal outcomes.[31]

Regarding long-term neurological outcomes, studies monitored surviving infants using comparable clinical parameters but over different follow-up periods. Most of these studies are retrospective and lack proper control groups, making them highly susceptible to bias.[31,40,41] One key advantage of EM is its non-invasive nature and its ability to allow the natural progression of pregnancy while avoiding risks associated with surgical interventions, such as preterm pre-labour rupture of membranes and infections. On the other hand, considering the pathophysiology of sFGR in MC twin pregnancies, EM may lead to a high risk of fetal demise or neurological injury in severe cases, as well as an increased risk of preterm delivery.

Invasive Management of sFGR

Invasive management (IM) aims to address the underlying pathophysiology of sFGR by either separating the vascular connections between twins, using fetoscopic laser photocoagulation (FLP), or selectively terminating the smaller twin using bipolar cord occlusion (BCO) or radiofrequency ablation (RFA), to improve outcomes for the normally growing co-twin.[20,21,26,27,43] Earlier studies applied these invasive procedures to all types of sFGR. This was also reported in a recent survey of clinicians, which showed that even for type I cases, a small portion of respondents would opt for intervention. However, most clinicians would reserve invasive procedures for more severe cases.[12]

A recent meta-analysis comprising 27 studies and 354 MC twin pregnancies evaluated both EM and IM across all types of sFGR. In cases of type I sFGR, the IUFD rate of the smaller twin following IM was 12%, whereas similar cases managed expectantly had an IUFD rate of only 2%. For type II sFGR, IM was associated with higher mortality but lower morbidity in terms of neurological outcomes compared to EM. In type III sFGR cases, IM resulted in higher mortality and morbidity in comparison to EM.[44]

Perinatal Outcomes Associated with Fetoscopic Laser Photocoagulation in sFGR

FLP involves coagulating the shared placental vessels to eliminate intertwin vascular connections, thereby addressing the underlying cause of sFGR. A 2001 study by Quintero et al. was among the first to evaluate the feasibility of applying FLP for sFGR.[45] Nevertheless, performing laser therapy for sFGR is technically more challenging due to the absence of the oligo-polyhydramnios sequence seen in TTTS.[12,33] Ishii et al. and Yamamoto et al. have reported FLP management for type II and III sFGR in cases where the smaller twin had oligohydramnios.[10,46]

(Survival Rates)

FLP has been associated with improved survival rates for the normally grown twin, especially in type II and III sFGR. However, the survival rate of the smaller twin remains lower compared to EM.[12,30-33] This phenomenon can be logically explained by examining the underlying pathophysiology of sFGR, particularly in type III cases, where the smaller twin, typically with a tiny placental territory, relies on its co-twin for vascular supply via a large anastomosis.[16,22]

(Gestational Age at Delivery)

Quintero et al. conducted a prospective randomized study comparing EM with FLP for type II sFGR.[33] Neurodevelopmental outcomes at approximately 70-75 months were not significantly different between the two groups; however, the FLP group had a significantly later GA at birth (33.4 weeks versus 28.3 weeks, p=0.0039). This outcome was associated with the expense of a higher mortality rate of the smaller twin in the FLP group (70%), all of which occurred during the fetal period. Overall, this study was limited by its small sample size. Given the later GA at delivery in the FLP group, it could be expected that a much larger cohort would also show reduced NDI. Their previous similar study initiated the use of FLP for managing sFGR, but this was conducted before the publication of the Gratacós criteria for classifying sFGR.[45]

Another study conducted in a country where FLP is the only alternative to EM was reported by Miyadahira et al.[47] Type II (n=36) and III (n=31) sFGR cases were included. Only those with absent or reversed a-waves of ductus venosus, used as clinical worsening parameters, were assigned to FLP treatment: 83% of type II and 29% of type III cases. Perinatal outcomes were not significantly different between the EM and FLP groups; however, they were not directly comparable, as no cases in the EM group showed an abnormal Doppler waveform of the ductus venosus. Other studies have presented similar results, which could contribute to further research to determine whether interventions should be reserved only for cases that worsen.[30-33,48]

(Neurodevelopmental Outcomes)

Isolated oligohydramnios of the smaller twin in sFGR has not been frequently discussed in the literature. Yamamoto et al. proposed considering it as a clinical parameter indicating worsening sFGR in MC twin pregnancies.[10] This might alleviate some of the technical challenges in performing FLP for sFGR, particularly since the normally grown twin does not have polyhydramnios, as seen in TTTS. Another potentially beneficial situation is that the flapping intertwin membrane would pose less of an obstacle in visualizing the placental anastomotic vessels. Amnioinfusion into the normally grown twin's sac may be helpful when necessary. They reported neurological impairment at 3 years of age in 4.5% of the smaller twins and 11.6% of the larger twins, leading to the conclusion that FLP could be a beneficial management option in severe forms of sFGR, particularly when accompanied by oligohydramnios in the smaller twin.

Many studies indicate that higher survival rates without neurological impairment for larger twins in severe forms of sFGR treated with FLP often come at the expense of an increased IUFD rate in the smaller twin. These findings suggest that the unequal distribution of placental territory could not be resolved solely by interrupting the intertwin vascular connections. Nonetheless, FLP considerably lowers the likelihood of fetal demise and the risk of acute brain injury in the larger twin due to acute feto-fetal transfusion.[33,36,45,49]

The coexistence of or superimposed TTTS in sFGR can be identified when the diagnosis of sFGR is made before that of TTTS. Studies have reported that such cases are more frequent in early-onset than in late-onset sFGR and carry a worse prognosis than sFGR without TTTS. These cases would ideally be treated with FLP, as it has become the standard of care for TTTS.[9,50,51] Nevertheless, defining which precedes the other may not be possible. A systematic review comparing TTTS cases with and without sFGR treated with FLP revealed that the coexistence of both conditions had a 50% increase in fetal loss and neurological morbidity. These adverse perinatal outcomes were significantly more prevalent in the donor twin.[52] The potential risks associated with the FLP procedure, such as preterm pre-labour rupture of membranes (PPROM), separation of the chorioamniotic membrane, accidental septostomy, uterine hemorrhage, placental abruption, and clinical chorioamnionitis, must be thoroughly discussed with parents or couples in advance.[9]

Perinatal Outcomes Associated with Selective Termination in sFGR

Selective termination via BCO, RFA, or more rarely, microwave ablation (MWA) has been recommended for consideration in severe cases of sFGR where the survival of the smaller twin is unlikely and poses a significant risk to its co-twin. This technique aims to prevent acute feto-fetal transfusion following episodes of hypotension or the demise of the smaller twin, thereby improving survival and neurological outcomes for the larger twin.[31,36]

Parra-Cordero et al. reported a series of 90 type II and III sFGR cases managed with BCO.[53] They found that 92.9% of cases resulted in more than 32 weeks of delivery, with a 93.3% survival rate for the larger twin. Townsend et al. reported in their meta-analysis that type I sFGR cases managed by selective termination, either by RFA or BCO, resulted in 100% survival, with no NDI found among these neonates. In type II sFGR, IUFD, and NND of the larger twin, the rates were 5% and 3.7%, respectively. The majority (90.6%) of survivors had no NDI. Selective termination for type III resulted in a 5.2% NND rate of the larger twin, with 98.8% of survivors having no NDI.[31] In terms of long-term neurodevelopmental outcomes at 6 years of age, 24% of surviving larger twins had NDI.[36] In cases where TTTS coexists with sFGR, which is expected to lead to worse perinatal outcomes, selective termination did not result in a significant difference compared to sFGR cases alone.[54]

The management of sFGR involves complex decision-making, particularly when considering invasive interventions such as selective termination. Given the emotional toll of these decisions, psychological support for parents is crucial. However, this option is not always feasible or available, as it raises ethical concerns and may not be acceptable to all patients or healthcare providers. In some countries, selective termination is illegal, making this type of management unavailable.[55-57]

Current Guidelines and Future Directions

The application of the Delphi procedure-based consensus and Gratacós classification in more recent studies has been a significant game-changer, leading to greater consistency in diagnosing sFGR.[16,17] This uniformity is likely to reduce potential bias in gathering further evidence-based comparative data, particularly regarding the natural history of the disease. However, questions remain regarding the use of the Gratacós classification in managing sFGR. GA at diagnosis, ductus venosus Doppler findings, and the presence of superimposed TTTS may impact prognosis. The potential alterations in the smaller twin's UA Doppler waveform along the course of pregnancy lead to variations in determining which data should be used as the basis for diagnosis, whether the first, the most frequent, or the last findings before IUFD or termination of pregnancy.[19,23,29,32,58] Therefore, it is reasonable to propose modifications to the classification by incorporating these parameters, followed by validation studies.[59]

Several limitations were observed in the overall included studies. First, variation in surveillance protocols across studies influences the outcomes of the management approaches. Variations in management protocols across centres, along with the diverse diagnostic criteria used in previous studies, should prompt a large, well-designed multicentre study. Second, the GA at diagnosis also affects the selection of management between EM and IM; therefore, it also affects the management outcomes. As previously mentioned, management has largely relied on expert opinions, as there is still no consensus. The lack of robust evidence to create reliable guidelines is understandable, given the rarity and complexity of the disease. Guidelines from prominent scientific organizations, such as the ACOG, RCOG, and ISUOG, clearly emphasize this issue.[17,60-62] There was also a limitation regarding the management approaches, especially in an operator-dependent procedure such as FLP. The outcomes of this management approach depend on the center's ability and expertise.

EM means closely monitoring the pregnancy and terminating it in a timely manner when deterioration occurs. In other words, no active intervention is undertaken despite a 15% risk of fetal demise and 26% risk of neurological injury in the surviving co-twin. These potential risks pose ethical challenges and psychological burdens to parents.[36,63]

IM consists of FLP and selective termination. FLP has not been proven to be significantly effective. To date, no large, robust, randomized trial has compared all management options for sFGR. Another challenge in performing FLP is that it is technically more difficult than its use for TTTS, which is considered the standard treatment. Selective termination of the smaller twin allows the larger twin to develop normally, but, as mentioned before, it may not be an option for some parents and clinicians. It may be perceived as the 'deliberate killing' of the unfortunate twin and immediately eliminates its chance of survival.[64,65]

CONCLUSIONS

The management of MC twins affected by sFGR remains a challenging clinical scenario. It relies primarily on expert opinion, which significantly impacts the likelihood of adverse perinatal outcomes. EM is appropriate for milder forms of sFGR (type I), while IM or interventions are warranted in severe cases to optimize outcomes for the normally grown twin. Early delivery can reduce mortality, but it is also linked to increased short- and long-term morbidity. Individualized care, guided by the type of sFGR and parental preferences, is essential for achieving the best possible outcomes. Despite these challenges, further studies are needed to refine management strategies and explore additional innovative therapeutic options. Robust, well-designed multicenter RCTs comparing EM versus IM strategies are essential, as are further investigations into the long-term neurodevelopmental outcomes of survivors using more uniform parameters.

Data Availability Statement

The data underlying this study are available in the published article.

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DECLARATIONS

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Conflict of Interest

The authors report no conflict of interest in this study.

Registration number of clinical trial

Not applicable.

Author Contributions

Conceptualization, writing – original draft, FOHP.; Writing – review & editing, FOHP, CPT, VS. All authors have read and agreed to the final version of the manuscript.

Use of artificial intelligence

This study does not use any artificial intelligence assistant.

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