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Human medical waste between individual ownership and institutional exploitation: the Placenta and Umbilical Cord as a model

النفايات الطبية البشرية بين الملكية الفردية والاستغلال المؤسسي: المشيمة والحبل السري أنموذجا

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Abstract:

Through this research paper, we will address the topic of medical waste, which has become a real challenge for health and environmental systems, due to its serious impacts in case of mismanagement nowadays. In the midst of this challenge, the issue of medical waste of a human nature has emerged, raising precise legal and ethical questions, given its unique source and its connection to the human body and dignity. The placenta and umbilical cord are among the most prominent medical wastes that fall under this category, as their classification as mere waste is being reconsidered today. Many scientific studies and industrial applications have proven their high economic and therapeutic value.

key words: *Placenta; Umbilical Cord; Use; Exploitation; Medical Waste*

الملخص:

من خلال هذه الورقة البحثية سوف نتطرق إلى موضوع النفايات الطبية التي اصبحت اليوم تشكّل تحديًا حقيقيًا أمام الأنظمة الصحية والبيئية، لما لها من آثار خطيرة في حال سوء التعامل معها، وفي خضم هذا التحدي، ظهرت مسألة النفايات الطبية ذات الطابع الآدمي، التي تُثير إشكالات قانونية وأخلاقية دقيقة، بالنظر إلى خصوصية مصدرها وارتباطها بجسم الإنسان وكرامته، وتعتبر المشيمة والحبل السري من أبرز النفايات الطبية التي تدخل في هذا الإطار، حيث يُعاد النظر اليوم في تصنيفها كمجرد فضلات، بعد أن أثبتت الدراسات العلمية والتطبيقات الصناعية قيمتها الاقتصادية والعلاجية العالية.

الكلمات المفتاحية:

المشيمة؛ الحبل السري؛ استعمال؛ الاستغلال؛ النفايات الطبية.

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Introduction:

This scientific and medical evolution in the repurposing of the placenta and umbilical cord has raised questions about the legitimacy of this exploitation, especially in light of the lack of legal awareness among the concerned individuals, and the transformation of these 'wastes' into raw materials used in the production of medicines, cosmetics, and stem cell transplantation. Here, legal aspects intersect with ethical ones, presenting a case that goes beyond mere disposal of waste to examine the nature of these materials in terms of ownership, their legal nature, and the basis on which they are transferred or managed.

While medical waste is usually classified according to its health or environmental hazards, human-origin waste 'despite not being classified as infectious' raises another issue regarding the legality of its possession and use, especially when this is done without the knowledge or explicit consent of its legal owner, who is often the child or their legal representative. This situation places doctors, hospitals, and factories receiving these materials in a position of dual legal and ethical responsibility.

This subject is becoming even more fundamental given the prevalence of these practices in many countries, including some Arab countries, without a precise regulation or sufficient awareness from the parties involved. Therefore, researching the concept of medical waste, then the legal nature of the placenta and umbilical cord, and the means of exploiting them, aims to establish a clear legal foundation that balances the interests of the child, the rights of hospitals, and public health considerations.

The focus of our study revolves around the extent to which the exploitation of the placenta and umbilical cord as medical waste of human origin is legitimate. Does their medical or economic nature justify acting upon them without explicit consent from the rights holder?

To address this issue, we used the descriptive and analytical method, by describing, defining, and determining the concept of medical waste. As for the analytical method, it involves analyzing the texts related to the regulations of this waste. In order to answer the question according to the mentioned methodologies, we will divide this research as follows:

* Section I: Determining the concept of medical waste.
* Section II: The legality of exploiting the placenta and umbilical cord as human medical waste.
* Section III: The nature of the finalized contract between the doctor or 'hospital administration' and the pharmaceutical and medical factories regarding the placenta.

Section I:
Determining the concept of medical waste

Through this study, we must address the concept of medical waste and its classifications, as follows:

A- Defining the concept of Medical Waste:

Medical waste is defined as all residues resulting from medical activities or related activities, which may pose a danger to the environment or human health; Law No. 25-02 related to the management, monitoring, and disposal of waste defines waste in general as all remnants resulting from production, transformation, or use processes, and more broadly as any substance or product, and anything that the owner or possessor plans to dispose of, intends to dispose of, or is required to dispose of or remove [1]

This law classifies waste into multiple types, including: household waste and similar types, bulky waste, private waste, inert waste, and finally medical waste, which is the subject of our study.

In the same context, Article 3 of the same law states that the waste from therapeutic activities is "all waste resulting from examination activities, medical follow-up, treatment, human and veterinary medicine."[2]

Based on the above, it can be said that medical waste includes all by-products resulting from therapeutic activities, regardless of the producing entity, whether it is a public or private health institution, clinics, pharmacies, drug stores that produce expired medications, or even research waste and medical experiments.[3]

This definition is consistent with what the World Health Organization has stated, defining medical waste as that which is produced from facilities that provide various healthcare services, laboratories, pharmaceutical production centers, medicinal preparations and vaccines, veterinary treatment centers, research institutions, and home care and nursing.[4]

It is noted through these definitions that the Algerian legislator is keen to align its legislation with international standards, as set forth in international agreements in this field.

B- Classification of medical waste:

According to the Executive Decree No. 03-478, wastefrom health care activities is classified into three main categories:[5]

1- Human organ waste: This includesbodilyorgans, remnants of surgicalprocedures and births.[6]

2- Infectious waste: This is waste that contains biological elements or toxins that negatively affect humanhealth, such as germs and viruses. [7]

3- Toxic waste: This includes; remnants of pharmaceuticals and expired pharmaceutical or chemical compounds materials that contain high concentrations of heavymetals, acids, usedoils, and solvents. [8]

4- This classification excludes radioactive waste that results from the use of radioactive materials in diagnostic or therapeuticradiology, in accordance with Article 30 of the samedecree. [9]

C- Health Damages caused by Medical Waste:

Medical waste is one of the most dangerous types of waste to public health, as it contains biological andchemical contaminants that can infect healthcare workers, patients, visitors, and even individuals outside medical facilities. Its danger lies in the potential for transmission of infection or the causing of chronic and serious diseases through contact, inhalation, or even accidental ingestion. [10]

1- Health hazards to humans :

Health hazards vary depending on the type of waste:

Infectious and sharp waste: Contains viruses and microbes that can be transmitted by touch or pricking, causing infectious diseases such as hepatitis, acquired immunodeficiency syndrome (AIDS), tuberculosis, COVID-19, measles, and German fever. It may also contain bacterial strains resistant to antibiotics.[11]

Chemical waste: It causes serious diseases such as cancer, birth defects, and genetic mutations. It can also cause explosions or fires. Discharging it into sewage systems exposes the environment and water to pollution and negatively affects beneficial microorganisms.[12]

Pharmaceutical waste: It has toxic effects on the environment and living organisms. It may cause the death of microorganisms essential for ecological balance and affect agricultural crops if used as fertilizer.

Radioactive waste: This is considered one of the most dangerous types of waste. Its severity varies depending on the type of radiation it emits. It can cause genetic cell damage, cancer, or mild symptoms such as nausea and vomiting.

2- Environmental damages of medical waste :

Water pollution: The discharge of heavy chemicals such as cadmium and mercury into sewage contaminates the sludge produced by treatment plants, affecting its suitability for agricultural use.[13]

Soil and groundwater pollution: due to the burial of medical waste in open areas or public pastures.[14]

Air pollution: due to the burning of certain medicines and pharmaceuticals, which leads to the emission of toxic gases that affect public health and living organisms.

Therefore, countries seek to establish effective mechanisms for the safe and sound management of medical waste, a goal that Algerian legislators are also pursuing by enacting laws and keeping pace with international standards in this area.

Section II:
The legitimacy of exploiting the placenta and umbilical cord as waste:

We have previously explained that the subject of our research focuses on medical waste of a human nature, namely: the placenta and umbilical cord, fetal remains, blood, and surgically amputated human body parts. However, we will only address two types of medical waste generated by humans: the placenta and the umbilical cord, as they are considered hazardous materials and waste, not infectious waste, according to the Ministry of Health's classification.

A- The concept of exploiting the placenta and umbilical cord:

1- Defining the placenta as human medical waste :

The placenta is defined as a thin, closed, membranous sac that completely surrounds the fetus. It contains a fluid that increases as the fetus grows until it reaches its peak in the seventh month. The placenta has several functions in the human body. It provides the fetus with digestible food in a specific amount, varying it according to its daily needs, both in quality and quantity. It also participates in the fetus's respiration process by supplying it with oxygen and taking in carbon dioxide. The placenta also excretes harmful substances from the fetus, such as urea, resulting from ongoing construction and demolition processes, into the mother's bloodstream. The umbilical cord is the canal connecting the placenta to the fetus.

This is the function and importance of the placenta during pregnancy. After birth, it has no role for either the fetus or the mother. It no longer represents any vital or functional importance to either of them. Therefore, after the fetus is born, its fate is trash, based on the superficial thinking of the average person. However, scientific advances have revealed its potential for use in scientific and pharmaceutical fields, and it may generate profits and gains for major companies specializing in this field, whether in Germany, Switzerland, or Sweden. In France, trucks are sent to collect it from maternity hospitals in Britain.

These human wastes 'placentas and umbilical cords' have become an important resource for pharmaceutical factories and scientific research laboratories, both governmental and private. This has created a competitive market for these factories and laboratories[15] by concluding agreements and contracts with private clinics and maternity hospitals, to supply them with their collected placentas. These are then taken to manufacturing centers, where the extraction of pharmaceutical components, such as certain hormones, antibiotics, and skin and hair ointments, begins.[16]

As for umbilical cord blood, it has become used in bone marrow transplants and in the treatment of many diseases, such as leukemia and some serious childhood diseases that may be hereditary. Hormones are also extracted from the placenta and umbilical cord for women seeking to become pregnant. These hormones treat some cases of infertility and stimulate the ovaries.

The use of the placenta in burns has been known since World War I, when the French surgeon René Lareche discovered that the substances surrounding the baby accelerate the healing of amputated limbs and wounds and most of the patients were soldiers.[17]

However, it is difficult to determine the legal nature of these agreements signed between clinics and hospitals, on the one hand, for the purpose of collecting placentas for a pharmaceutical manufacturer or research laboratory, on the other. Whether they are considered sales contracts or an extension to a medical contract is difficult to determine. Each has its own legal description, and the results are determined based on that description. Before starting to define this legal description of the contract, we would first like to determine who owns the placenta, and on what basis does the doctor or hospital make use of it?

2- The Owner of the Placenta :

Both the mother and the fetus contribute to the formation of the placenta and umbilical cord. They attach to the mother during pregnancy, and are released after birth and are thrown out. So, who owns them?

First, moving away from the doctor and the father. The former's role is limited to the delivery process in exchange for the fee he receives 'a medical contract'. Nothing in this contract requires the patient to transfer any of his or her medical waste to the doctor, nor to own any of it. Although the father has a fundamental role in the initial pregnancy 'fertilization', his role stops there. He has no role in the fetus's development and completion. Thus, we conclude that the placenta is the property of only two parties: the mother and the child.

It is true that the mother's uterus contains the fetus attached to the placenta by membranes. The placenta plays a primary role in nourishing the fetus until it is fully developed, after which it is born, followed by the placenta.However, it is difficult to claim that she owns it, because acknowledging this would violate the fetus's independence from the mother during pregnancy. This is translated by the Algerian Penal Code into punishment for a mother who causes a miscarriage or abortion. This independence includes acknowledging the fetus's right to everything that would preserve its life during pregnancy, first and foremost the placenta. Otherwise, what is the meaning of saying that the fetus owns it throughout the pregnancy, and then loses it after birth?

Hence, the placenta belongs to the fetus 'the child after birth'; even if the fetus is unable to express his will due to its absence, according to general rules, his parents act on his behalf in a way that serves his best interests.

B-The legal nature of the placenta and the legitimacy of dealing with it:

In the science of law, the rules of right are based on two things: persons and things. The person is the owner of the right, and the thing is the subject of the right. So,what is the nature of the placenta in this case?

Hence, we find ourselves completely moving away from people to approach the circle of things. However, this is something different from what we studied in the theory of right. Rather, it has a human origin. The placenta, as we have explained, is not the fetus itself, even though it is a vessel for it and contains it throughout the pregnancy. After birth, it is of no use to the fetus in its growth or maturation. Hence, we ask an important question: Is it permissible to consider the placenta among the things that its owners abandon as'waste', such that anyone can seize it, or does its human origin grant it a special legal status?[18]

It is also legally known that a child's legal representative cannot waive the child's assets or any of their rights. They are supposed to protect the child's interests, not harm them. Any action that does not do so is considered invalid. In this case, the placenta has financial value, and based on the general provisions, the representative must protect the child's assets.

However, the legal representative's free waiver of the placenta often, if not always, results from his ignorance of the significant financial value of these items. Indeed, obtaining the placenta for any child's legal representative may represent a burden in the attempts of disposing them.Even if they know the placenta's value, they do not actually know how to take advantage of it. Such as, how to transport them or sell them to pharmaceutical or research facilities. This often leads them to give them away without compensation or awareness of their value.

Therefore, describing such things as abandoned or 'waste' is legally valid only if the person leaving,'the person giving up', or 'the owner or his legal representative' is fully aware of what he is leaving behind and whether it has any value or not.

On the other hand, an important question must arise regarding the obligation of the obstetrician or hospital administration to inform the child's legal representative of the truth of that matter. Does their silence constitute a breach of the medical contract or a failure to fulfill their duty in good faith? In short, does this silence constitute fraud or deception that would confuse others, and as a result, render the contract void pursuant to the provisions of Article 86 of the Civil Code ? Which states that: "A contract may be invalidated for fraud if the tricks resorted to by one of the contracting parties, or his representative, are so serious that without them, the other party would not have concluded the contract.

Deliberate silence about a factor circumstance is considered fraud, if it is proven that the person deceived would not have concluded the contract if he hadknown about that fact or circumstance"[19]

The second part of this legal article recognizes the effect of intentionally remaining silent about a fact or circumstance that, if known to the other party, would result in his recusal from concluding this contract.

It's true that there is no contract, even a voluntary one, between the child, through his legal representative, and the doctor or hospital administration regarding the waiver of

the placenta. All that is conceivable is that the child's representative abandoned it as waste. There is no harm in the doctor exploiting this situation to his advantage. Indeed, this situation is repeated almost daily by almost everyone, as garbage is thrown in specific places for the garbage collector to pick up, sort, and utilize the materials and items it contains, without anyone being able to demand compensation for what he has benefited from.[20]

We conclude here that there is a fundamental difference between abandoning the placenta without the guardian or the child being aware of its value, and disposing of it as trash while fully being aware of its value. Abandoning the placenta is often done out of ignorance, with the doctor or hospital administration refusing to explain its value or how to make use of it.

We can visualize the difference between the two in light of the legalarticle 86 of the civil code mentioned above in its second paragraph, which recognizes that silence has the effect of distorting the will and allowing a request for annulment. However, the matter is not considered a criminal fraud, because thechild or 'newborn' would not have given it up for free if he had known its financial value.

Here, we arrive at an important conclusion, which may seem strange, that these items remain the property of their owner, and that any disposal of them would be considered a disposal of the property of another. All of this results insignificant consequences for all three parties: the child, the doctor or hospital administration, and the pharmaceutical manufacturing plants or research labs.

This may be an unacceptable result for doctors and hospitals, but it is an application of logic and the philosophy of law.

As for the factories and laboratories that are the final recipients of these things, there is no significant problem for them because they paid for them, unless they were proven to have known about the illegal nature of the transaction.[21]

Section III: The nature of the finalized contract between the doctor or 'hospital administration' and the pharmaceutical and medical factories regarding the placenta:

We have concluded that the placenta is considered as a 'thing' rather than a person in its legal nature. Therefore, we can deal with it legally. We must alsodetermine or set the transaction concluded between the doctoror hospital administration and the factories regarding the placenta to its closest legal form. By referring to the legal texts that regulate contracts and the actual intentions of the parties, we find that the closest legal form to this agreement is the sales contract. In this contract the parties are the doctor or the hospital acting as the seller, while the research laboratory or pharmaceutical factories are considered the buyer.

Article 351 of the Algerian Civil Code defines "a sales contract as an agreement by which the seller undertakes to transfer ownership of a thing or other financial right to the buyer in exchange for a monetary price."[22],For a sales contract to be valid, its basic

elements must be met: consent, subject matter, and cause. This requirement applies even if the price is not specified or does not reflect the true value of the item sold. This requirement applies as long as there is a real monetary consideration, not a symbolic or trivial one. A trivial price conceals a donation contract 'gift', not a sale contract. The seriousness of the price is the primary criterion, even if the price is low.

When the two parties do not agree on a price, this does not invalidate the contract if the circumstances indicate that their intention was to adopt the current market price or the price customary between them, as stated in Article 357 of the Algerian Civil Code, whenever circumstancesrequire it.[23]

The provisions for the sale of third-party property stipulated in Articles 397 and subsequent articles of the Algerian Civil Code must be applied whenever circumstances so require[24]

This description also applies if the contract made between the hospital or doctor and the laboratories is done by an intermediary, or even if the purchase is made directly from the child through his or her parents.

Results and discussion:

Classifying the placenta and umbilical cord as medical waste does not negate their connection to the human right when it comes to protecting the body and its dignity.

The exploitation of these materials is not considered legitimate without a free and prior consent of the rights holder.

The absence of a clear legal framework in Algerian law opens the door to practices that may violate legal or ethical legitimacy.

The economic or medical nature of these substances does not constitute sufficient justificationsto dispose of them individually, without clear legal and ethical safeguards.

A- Suggested recommendations:

Calling on the Algerian legislature to issue specific legal texts regulating the management of medical waste of human origin, ensuring respect for human dignity.

Include the principle of free and prior consent as an essential condition in any form of exploitation of these materials._

The necessityof invest in it instead of throwing it away as trash, while taking into account the sanctity of Islamic law 'Sharia'.

The need to involve ethical and medical staffs in formulating policies related to this issue to ensure a balance between therapeutic needs and respect for individual rights.

B- Conclusion:

This study demonstrates thatthe placenta and umbilical cord, despite their classification as medical waste, cannot be subject to the logic of ordinary waste due to their human nature and direct connection to the human body. Exploiting these materials for therapeutic or cosmetic purposes raises complex legal and ethical issues, especially in the absence of explicit legislation regulating this type of behavior.

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